TRIAL EXHIBIT 2237
(PART 1 OF 3)

ORACLE®

ORACLE CORPORATION

Acquisition of sole control over

SUN MICROSYSTEMS, INC.

Sun microsystems

Case COMP/M. 5529

Form CO relating to the notification of a concentration

under Council Regulation (EC) No. 139/2004

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INTRODUCTION AND SUMMARY

1. *The underlying drivers of Oracle's proposed acquisition of Sun are pro-competitive.* Oracle is interested in acquiring Sun principally because the Transaction would allow Oracle to:

    - *Combine the highly complementary businesses of Oracle and Sun* to provide customers with the additional option of buying a complete, optimised, open standards-based hardware and software system – "from application to disk" – providing them with greater choice and an opportunity to reduce systems integration costs;

    - *Reinvigorate Sun's SPARC central processing unit ("CPU") and Solaris operating system ("OS")* as a viable technology platform, preserving investments by existing customers and strengthening an alternative to other dominant platforms;

    - *Defend and accelerate the popularity and growth of Java*, the development environment relied on by Oracle as well as many of its competitors and partners, as an open standard development environment alternative to Microsoft Corporation's Windows and .NET platforms; and

    - *Strengthen and support MySQL* as a complementary open-source database offering to reach a category of web-centric developers that Oracle does not reach today and to challenge Microsoft's SQL Server as a default database for deployments requiring less complexity.

2. Thus, the transaction will, if anything, increase rather than reduce the degree of competition that exists in the markets addressed by the Parties today. The analysis of competitive effects set out in Section 7 of this Form demonstrates that the areas of limited overlap between the Parties will not be subject to horizontal effects as a result of the Transaction, that Oracle's acquisition of Java does not provide Oracle with either the ability or incentive to 'foreclose' its competitors and that there is no basis to believe that the Transaction would generate any conglomerate effects.[1]

3. *Oracle's proposed acquisition of Sun would bring together highly complementary businesses with very limited product overlap.* This Transaction brings together highly complementary hardware and software businesses. Oracle sells a variety of

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[1] *See also* Responses to the EC Questions dated 19 May 2009 and Responses to the EC Questions dated 3 July 2009, attached as **Annex 1**.

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enterprise software solutions, including database, middleware and enterprise application offerings. Sun's product portfolio, on the other hand, includes servers, storage, microchips, operating systems, the Java development environment, office applications, middleware and database. Existing competition between the Parties is extremely limited, Oracle having practically *no* product overlap with the significant majority of Sun's business – over 85% of Sun's billings in FY08 came from Sun products for which Oracle has no competing offering.[2] The limited potential overlap of product offerings is between (a) Oracle's database and Sun's MySQL database and (b) some of the Parties' middleware products.

4.   *The addition of Sun's Solaris server and other hardware offerings will enable Oracle to offer more complete and open systems from "application to disk," giving customers greater choice and an opportunity to reduce systems integration costs.* The addition of Sun's hardware products to Oracle's enterprise software offerings will allow Oracle to provide integrated, open standards-based hardware and software systems, optimised to deliver better performance, improved reliability and enhanced security, at a lower total cost. Currently, customers incur significant, ongoing, expenses to integrate their hardware and software components (including optimisation and tuning) and are looking to reduce the complexity, risk and total cost of system ownership. By combining Oracle's open-architecture software products with Sun's hardware and operating system, the Transaction will provide an alternative to systems provided by IBM, Hewlett-Packard and others and allow customers to avoid systems integration expenses. Importantly, these choices will all be additive to the market, as Sun's offerings will still be available on a stand-alone basis.

5.   *The Transaction will strengthen Sun's SPARC/Solaris offerings and reinvigorate SPARC/Solaris as a viable platform.* The SPARC microprocessor was once Sun's crown jewel, but has suffered from a lack of investment. Sun's financial condition has left it unable to compete with the much larger budgets of Intel and IBM, for example. In fact, Sun felt compelled to begin shipping x86 systems in 2002 and entered into an alliance with Intel in 2007 in exchange for Intel's support of Sun's

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[2]   Available at http://www.sun.com/aboutsun/investor/earnings_releases/call_slides.jsp. Slide 5 provides full FY08 billings information; detailed revenue data on a product basis was unavailable from Sun. For purposes of approximating the proportion of billings that came from non-overlapping products, what has been included in that category is all systems billings, Java billings, all storage billings, and 89% of the hardware, software support (based on an estimate provided by Sun). While the other line items may also include billings from non-overlapping products, the Parties chose to simplify the calculations for this exercise by assuming that all of the software billings other than Java (MySQL/Infrastructure and Solaris, management and virtualisation) and all of the professional and education services were entirely related to overlapping products (which they are not). Accordingly, the resulting billings for non-overlapping products is (at least) USD 11.864 billion over USD 13.88 billion in total revenues, or approximately 85%.

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Solaris OS.[3] Oracle is currently in neither the microprocessor nor operating systems business, but intends to revive the SPARC/Solaris architecture as a performance alternative to Intel, as well as to IBM's mainframe products. By offering Sun hardware optimised for Oracle software, as well as offering Sun hardware on a stand-alone basis, Oracle will create a differentiated platform solution that challenges Intel and IBM, as well as protects the billions of Euros that Sun customers have already invested in SPARC/Solaris products – many of whom are already running Oracle products.[4]

6.   *As a result of the acquisition, Oracle will be able to defend and accelerate the popularity and growth of Java as an open-standards development environment.* Oracle's strategy has long been to provide products that are engineered so that each component can be used with both Oracle and non-Oracle products – a strategy that depends heavily on open standards. Java is the most popular open standards-based development environment and Oracle's Fusion Applications and Fusion Middleware offerings – Oracle's fastest growing products – are built entirely on Java. Oracle's future as a software company is predicated on the success of a unified and vibrant Java: the more developers adopt Java, the greater the choice and lower the cost for customers to use Oracle products, increasing demand. The more customers adopt Java, the more system environments are hospitable to the more than USD 10 billion/year of Oracle middleware and applications. For Java to be successful, however, it must remain open: openness of the standard is its main appeal and a precondition for continued interest in the development environment. As such, anything an acquirer might theoretically do to "close" Java would be completely contrary to Oracle's significant financial and strategic interests in the proliferation of an open Java standard.

7.   Java's continued success is threatened, however, by Sun's lack of leadership, by the potential fracturing of the Java standard and by Microsoft's dissemination of its closed ubiquitous .NET environment with the Windows OS.

     •   *Lack of leadership by Sun.* Many key participants in the Java Community Process ("JCP," the Java governing organisation), including Oracle, are frustrated by Sun's lack of momentum, which dissuades adoption of and contribution to Java standards. Oracle, along with others, has consistently advocated for more inclusive governance of the JCP, and broader participation to make Java more attractive.

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[1]   *See* "Sun and Intel Announce Broad Strategic Agreement," available at http://www.sun.com/2007-0122/feature/index.jsp

[1]   *See* below, paragraphs 10-13, for more details.

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- *A fracturing of the Java standard.* Java's key design point and source of appeal is that applications can be "written once" with one language and run on any operating system, based on open standards. As a result of Sun's lack of leadership, however, the Java developer community is starting to splinter. The Harmony project (financed by IBM, Intel, Microsoft, Google and others) and Google's Android OS are examples of Java's fracturing. With much at risk – especially for Oracle – were Java to be weakened as a "standard," Oracle intends to reunite the Java community and evangelise for an open, unified standard and a vibrant developer community and ecosystem.

- *The .NET threat.* Microsoft has ubiquitously disseminated its proprietary .NET technology by bundling it with its dominant Windows operating system. As a result, .NET has overtaken Java as the development environment of choice. If nothing is done to counter the splintering and lack of leadership, Java's position as a standard will suffer; developers might turn their efforts to developing applications and other products for the dominant Microsoft's Windows and .NET platforms, which would be detrimental to competition at the development environment level and hurt not only Oracle but all vendors that rely heavily on Java.

8. *Oracle also expects to strengthen and support MySQL as a complementary open-source offering to reach a different category of web-centric developers and to challenge Microsoft's SQL Server.* The addition of the open-source MySQL database gives Oracle a product that technically serves a fundamentally different purpose than any of Oracle's current database offerings and reaches an entirely different group of developers. MySQL is designed to be easily deployed and maintained, and is best suited to implementations wherein the requirements can be readily addressed through horizontal scalability (*e.g.*, web sites, single-use installations, or small, discrete data sets).[5] Oracle's database (currently Oracle Database 11g), on the other hand, is designed for implementations where security, reliability and vertical scalability are paramount.[6] Implementation and maintenance of an Oracle database is highly complicated, as the database is deployed where transaction integrity, high data volumes, compliance and archiving become relevant (*e.g.*, enterprise financial/accounting systems). While one could use Oracle and MySQL interchangeably in limited circumstances, very few users actually do so; and because of the technical differences, the products see very little head-to-head competition – they are simply different tools for solving entirely different problems.

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[5] Horizontal scaling usually refers to running multiple instances of an application or database on multiple independent computers in order to meet a customer's scale requirements.

[6] Vertical scaling typically refers to running a *single* instance of an application or database by adding more processors and storage to support required volume and complexity.

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9.   Oracle will also be able to use MySQL better to challenge Microsoft's SQL Server database. Since Oracle's current database is often overly complex for the needs of many customers, Microsoft's SQL Server has become a "default" among customers with simpler requirements, with little competition from Oracle, IBM and other complex databases. By backing MySQL with Oracle's experience and support organisation, MySQL will have greater credibility and vitality and pose a greater competitive threat to Microsoft SQL Server for customers requiring an offering more suitable for horizontal deployment.

10.   *As a result, the transaction will, if anything, increase rather than reduce the degree of competition that exists in the markets addressed by the parties today.* The Transaction does not give rise to meaningful horizontal, vertical or conglomerate effects:

- *No risk of horizontal effects.* In those limited areas where Oracle's and Sun's products might be said to overlap – databases and certain types of middleware – the Transaction does not meaningfully alter the market conditions that exist today, and competition will continue to be intense.

     o *No basis for unilateral effects.* The Transaction would not give rise to appreciable unilateral effects either in the database or middleware markets:

          - *Absence of meaningful unilateral effects with respect to databases.* Oracle's acquisition of Sun would not materially alter competition in the database market:

               o *The open-source nature of MySQL makes it impossible for Oracle to negatively impact database competition.* Any anticompetitive concerns about Oracle's acquisition of MySQL as an overlapping database are misplaced. MySQL is open-source: the source code is freely available and priced at zero. Oracle gains no ability to reduce output. In fact, the MySQL code is already beyond Sun's control, as evidenced by "forks" (new editions) of the code offered by Google, for example, as well as by a founder of MySQL. Additionally, the products are so different that there are several competitors that lie between Oracle and MySQL on the chain of substitution, including IBM, Microsoft, Sybase and two transaction-oriented open-source vendors (Postgres and Ingres). Accordingly, after the Transaction, the competitive landscape for each database product will be, at worst, substantially similar to how it was prior to the Transaction.

               o *Oracle and Sun are not close competitors and rarely compete head-to-head.* The technical differences between MySQL and

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Oracle Database are reflected in the fact that MySQL very rarely competes with Oracle head-to-head for the same customers. For each of the Parties there are competitors that are closer to either Oracle or Sun than the Parties are to each other.

o *Oracle will continue to face fierce competition from IBM, Microsoft and other database vendors.* The incremental addition to Oracle's database share that Sun represents is insignificant. Oracle will continue to face intense competition from IBM, whose breadth of offerings and customer base is equivalent to if not larger than Oracle's. Oracle will also continue to face competition from Microsoft, which leverages the ubiquity of its Windows Server operating system in a variety of software markets, including databases.

• *Absence of meaningful unilateral effects with respect to middleware.* Neither will the fundamental characteristics of the competitive landscape in middleware products change as a result of the Transaction:

o *Oracle and Sun are not close competitors and rarely compete head-to-head.* Oracle has a comprehensive middleware suite of products, while Sun has a small number of middleware components, of which only a few are worth mentioning in terms of product overlap: application servers, portals, ESB and BPMS.

o *All major providers of enterprise software compete in the crowded middleware space.* A large number of vendors are active in middleware and its segments, including broad solution providers, pure-play point product vendors, and open-source providers. In addition, virtually all of the recognised leading vendors in software collide on the middleware market, including IBM, Microsoft, SAP, Tibco and others. As a result, competition in middleware is, and will continue to be, particularly intense.

o *In addition to the competition amongst the established Java platform vendors, these vendors would simultaneously face the shared challenge of Microsoft's leveraging of its operating system dominance to capture the middleware market.* Microsoft has made a substantial middleware investment, which is often overlooked in market share reports because Microsoft bundles its .NET middleware in its Windows Server operating system. Microsoft's share of the middleware market is therefore generally significantly underreported. In reality, Microsoft uses the dominant position of Windows in virtually every large and small enterprise to drive *de*

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facto adoption of its .NET middleware at the expense of open-standard, Java-based middleware offerings. The combination of Oracle and Sun would put two companies focused on standards and interoperability together on a more stable footing and allow for the distribution of those technologies as part of a far broader Oracle offering, creating a stronger challenge to Microsoft's .NET platform.

o   *No basis for coordinated effects.* Any concerns of coordinated effects post-Transaction can confidently be dismissed, in view of the products, parties and competitive conditions involved. Similar to enterprise software, generally, the markets for database and middleware are not in any way conducive to coordinated effects. The existence of factors such as differentiation, lack of pricing transparency, a large number of credible vendors and asymmetry in vendors' market shares (and indeed their wider strategic incentives) rule out any plausible theory of coordination in middleware or any sub-segment thereof. In addition, incremental costs are extremely low – once the fixed costs of development have been incurred, distribution of incremental licenses is virtually costless. This creates a strong incentive to compete aggressively for incremental sales. Moreover, the proposition that long-time archrivals such as Oracle, IBM and Microsoft would ever consider tacit coordination in either database or middleware is highly implausible.

•   *No risk of vertical effects.* Oracle's acquisition of Java does not give rise to input foreclosure. Due to existing checks and balances, the "owner" of Java—be it Sun or Oracle—is legally and practically prohibited from abusing the Java development process to advantage itself or disadvantage competitors. In addition, Oracle's economic and strategic incentives would be completely at odds with any effort that could lead to the fragmentation of Java.

o   Like Sun, Oracle does not have the legal or practical ability to foreclose competitors by abusing the Java development process. The Java Community Process (or JCP) operates much as any open-standards forum in overseeing the development of Java. Oracle (like Sun now) would not be able unilaterally to impose a new Java standard or modifications to the existing Java standard without approval of the Executive Committees of the JCP, who are elected by the Java community and include many of Oracle's competitors.

o   In addition, the Java Specification Participation agreement entered into by Sun and members of the JCP legally requires Specification Leads, like Sun/Oracle, to license key Java intellectual property to all users who comply with the community-approved specifications on fair, reasonable and non-

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discriminatory terms and prohibits any constraints on potential competitors who comply with the Java specification.

- o   Moreover, Oracle's strategic incentives would be completely at odds with any effort that could lead to the fragmentation of Java because:

  - Oracle's USD 10 billion/year Fusion Middleware and Fusion Applications business completely depend on the continued success and growth of Java as an open, unified standard. Oracle's operating system-agnostic and "hot-pluggable" strategy rests on Java's "write once, run anywhere" characteristic, and this dependency ensures Oracle's commitment to Java.

  - Unlike Sun, Oracle will earn revenue and profits by monetising Java indirectly by selling Java-based software. This indirect monetisation potential can only be realised through broader adoption of Java as a standard.

  - Any attempt to bias Java to favour Oracle's software, even if it were legally or technically feasible, would contravene precisely the very principle on which Java operates: its cross-platform nature. Oracle's strategy depends on having any customer – regardless of their legacy hardware or software – being able to implement Oracle products without having to abandon previous investments. Any attempt to bias Java would result in the platform becoming fragmented and the pool of customers to which Oracle can cross-sell its software offerings shrinking. IBM, Google and others have already promoted forked versions of Java specifications. Once Java fragments, it is no longer as attractive a development environment and that would work to the direct advantage of Microsoft and its .NET platform, not in favour of Oracle. Simply put, a fragmented Java would be weaker against .NET.

- *No risk of conglomerate effects.* The proposed Transaction will not lead to any adverse conglomerate effects on competition. While the proposed Transaction will permit Oracle to offer more attractive packages of products to those customers who value such packages, this is an efficiency benefit – in that it expands the options available to customers – and not an adverse conglomerate effect on competition. Any leveraging or bundling strategy involving databases and middleware, operating systems or server hardware would be incompatible with Oracle's incentive as a commercial enterprise to maximise profits, its clear and consistent track record of continued support for multiple platforms and technologies following the PeopleSoft, Siebel and BEA transactions, among others, and its longstanding and fundamental sales proposition of interoperability and open-standards support.

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SECTION 1

Description of the concentration

1.1 *Provide an executive summary of the concentration, specifying the parties to the concentration, the nature of the concentration (for example, merger, acquisition, or joint venture), the areas of activity of the notifying parties, the markets on which the concentration will have an impact (including the main affected markets), and the strategic and economic rationale for the concentration.*

1. ***Parties to the concentration, the nature of the concentration, the areas of activity of the notifying parties, the markets on which the concentration will have an impact.*** On 19 April 2009, Oracle Corporation ("Oracle") and Sun Microsystems, Inc. ("Sun") (collectively, the "Parties") entered into an Agreement and Plan of Merger (the "Agreement") pursuant to which Oracle will acquire all of the outstanding voting securities of Sun for USD 9.50 per share (the "Transaction"). The total Transaction value is approximately USD 7.4 billion in equity, USD 5.6 billion net of cash and debt. A copy of the Merger Agreement is attached as **Annex 3**.

2. Oracle is a corporation organised under the laws of Delaware, USA. Oracle is headquartered in Redwood Shores, CA, USA, and develops, manufactures, markets and distributes enterprise software, including a variety of middleware, database software and enterprise applications software and related services.

3. Sun is a corporation organised under the laws of Delaware, USA, and is headquartered in Santa Clara, CA, USA. Sun provides servers, desktops, microelectronics and storage, and software, including operating systems, Java Technology, middleware and database software. It also provides services, including support and managed services, and professional and educational services. (For more details on the parties' products, overlaps, and potentially affected markets, *see* Sections 6 and 7).

4. The Transaction comprises the acquisition by Oracle of all of the outstanding voting securities of Sun. For that purpose, Oracle entered into the Agreement with Soda Acquisition Corporation (the "Merger Subsidiary"), its wholly-owned subsidiary, and Sun. Pursuant to the Agreement, the Merger Subsidiary will merge (the "Merger") with and into Sun, in accordance with Delaware Law, whereupon the separate existence of the Merger Subsidiary shall cease and Sun shall continue as the surviving corporation and become a wholly-owned subsidiary of Oracle.

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5.   Sun's Board of Directors has voted unanimously in favour of the Transaction and Sun's stockholders have approved the Transaction in a special meeting held on 16 July 2009.[7] Oracle stockholder approval is not required.

6.   The Transaction is conditional upon (i) clearance under applicable antitrust laws, (ii) approval of the Merger and adoption of the Agreement by Sun stockholders, and (iii) other customary closing conditions. In addition to the present notification, the acquisition of Sun by Oracle has been or will be submitted for the approval of the antitrust authorities of the United States of America, Argentina, Australia, Brazil, Canada, China, Colombia, Israel, Korea, Japan, Mexico, Russia, South Africa, Switzerland, Taiwan, Turkey and Ukraine.

7.   *Strategic and economic rationale for the concentration.* As noted above (Introduction and Summary), Oracle aims to:

   o   Deliver a complete, open and integrated system, "from applications to disk," providing an additional choice to customers by reducing systems integration costs and risks, while at the same time maintaining and enhancing all existing customer choices in the marketplace.

   o   Revive SPARC/Solaris as a viable microprocessor/OS platform and enable Oracle to up-sell and cross-sell additional products and services.

   o   Defend and accelerate the growth of Java as an open standard development environment to compete effectively against Microsoft .NET and to drive middleware and application sales.

   o   Combine MySQL and Oracle support to reach a new developer audience and challenge Microsoft's SQL Server.[8]

8.   Oracle's proposed acquisition of Sun is consistent with Oracle's strategy to provide complete, open and integrated systems. Oracle has always positioned itself as the open standards-based, interoperable alternative to closed solutions and Oracle's product portfolio is engineered so that each piece can be used with Oracle and non-Oracle components, thus preserving customer choice. After the closing of the Transaction, Oracle plans to engineer a complete, integrated system from applications to disk, fully optimised, and based on an open architecture. Customers will benefit from significant savings on systems integration and consultancy costs and from increased

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[7]   http://www.sun.com/aboutsun/pr/2009-07/sunflash.20090716.1.xml

[8]   *See* Oracle document explaining the strategic rationale, 17 April 2009, prepared for Oracle's board by Douglas Kehring, Oracle's Senior Vice President, Corporate Development, which is included in Annex 31a.

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system performance, reliability and security. These will be additive choices in the market, as all of Sun's products will continue to be available on a stand-alone basis. That said, the number-one cost in enterprise computing is neither hardware nor software: it is making heterogeneous systems work well together. Systems integration requires constant, ongoing expense as incompatible or custom components are upgraded or replaced. Oracle has heard from its customers that they want to reduce the complexity, risk and total cost of system ownership and have fewer responsible IT providers. Many customers have also been asking Oracle to take on a broader role to reduce complexity, risk and cost by delivering a highly optimised standards-based product stack. Following the Transaction, Oracle will be able to optimise the stack across hardware and software to deliver higher performance, improved reliability and enhanced security, while using open standards to maintain customer choice and flexibility.

9.   Open standards enable interoperability and ensure that customers who have to mix and match or at some point wish to include non-Oracle components in their systems are able to do so easily and without loss of functionality or performance. Since both Oracle and Sun have long track records supporting open standards, this Transaction delivers that benefit to customers and enhances Oracle's commitment to open standards and choice. Post-closing, Oracle plans to offer a broad set of products, including servers and storage, with all the integrated pieces: hardware, OS, database, middleware and applications. Oracle's unique value proposition is to make all the pieces fit and work well together, to minimise systems integration costs and to provide customers with an additional choice in the market. Customers may rest assured that, while Oracle may offer a comprehensive suite of products, Oracle's commitment to interoperability will avoid any "lock-in." Oracle's view is that by being committed to an open but comprehensive set of offerings, it appeals to the largest number of potential customers – as customers can choose portions of the portfolio, without being pushed into buying the entire stack.[9] Oracle remains committed to Linux and other platforms, including competitive operating systems from IBM, Hewlett-Packard, Microsoft and others, and its products will continue to be built to work with all hardware and operating systems and other vendors' products. This commitment to openness ensures that all customers will benefit from the Transaction, even if they buy only a component from Oracle.

10.   An important goal of the Transaction is to re-energise some of the most important competitive assets in the industry. Sun's poor financial

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[9]   Customers acquiring individual products will also benefit from the Transaction as a result of the increased security offered by Oracle as a financially secure vendor and Oracle's increased investment in critical technologies.

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performance has caused it to reduce investment (or slow the growth of investment) in critical technologies such as SPARC, Solaris and Java. As a result, Sun has been losing market share to IBM, Hewlett-Packard, Dell, Intel, Microsoft, EMC and others, and, more importantly, it has been losing relevance. Sun customers have made multi-billion Euro investments in the SPARC/Solaris architecture. A number of factors have contributed to the decline of the competitive position of SPARC and Solaris, but two are of particular relevance. First, Sun's overall financial condition has been poor. As reported in Sun's most recent quarterly report, Sun had a net loss of USD 201 million in the quarter ending March 31, 2009 and a net loss of USD 2.087 billion for the first three quarters of fiscal 2009. These losses have led to substantial cost-cutting and a reduction in investment across the board: overall research and development expenses were down 14% in the last quarter compared to the previous year and 10% over the last 9 months. Moreover, the perception that Sun is troubled leads to a fatal cycle: customers don't invest in hardware platforms of troubled companies for fear that they are buying obsolete technology, that lack of demand leads to lower investment by Sun, which reinforces the view that the technology is becoming obsolete, and so on.

11. Second, Sun's management made strategic decisions to expand or otherwise emphasize its software business, at the expense of the hardware business. In other words, Sun not only underinvested, it misallocated its investments in the minds of customers making a strategic decision to rely on SPARC. These strategic decisions have further confused or alienated Sun's hardware customers by bringing into question Sun's focus and raising questions of Sun's viability or relevance to the microprocessor market.

12. About 25% of Oracle database customers have selected SPARC/Solaris as their architecture. Sun's tenuous financial condition made it unable to compete against the much larger budgets of Intel, IBM, Microsoft and Hewlett-Packard and forced it, for example, to start shipping Intel-based processors. Oracle will instantly make all of Sun's products, services and technologies much safer bets for IT buyers focused on long-term viability and seeking assurances related to product roadmaps. Oracle intends to revive the SPARC architecture, enabling up-sell and cross-sell opportunities for Oracle and ensuring the continued success of the SPARC/Solaris platform, protecting the investments customers have made. The Transaction safeguards the billions of Euros consumers have invested in Sun products and technologies.

13. Following the Transaction, Oracle will be a champion of open, standards-based Java software, in competition with Microsoft's closed and proprietary .NET platform, which is bundled with its dominant server operating system. Competition among application development environments turns on

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adoption.   The more customers and developers embrace a particular development environment, the more popular that environment becomes due to the increasing numbers of developers experienced in that environment, training resources, documentation, *etc*. The popularity has less to do with technical superiority and more to do with the by-products of an environment's scale.

14.   It is the potential for .NET dominance that gives Oracle an enormous interest in the success of a unified, open Java standard. Oracle's USD 10 billion/year Fusion Middleware and Fusion Applications completely depend on the continued success and growth of Java as an open, unified standard. This is because Oracle's "hot pluggable" strategy rests on Java's "write once, run anywhere" design point and the ability to run Oracle's software on all major operating systems. Oracle's dependency on standards-based Java ensures Oracle's commitment to Java.

15.   Java's success – for Oracle and the industry – depends on Java remaining open and unified. Momentum for Java has stalled under Sun's stewardship and will benefit from Oracle's guidance and ability to make substantial financial investments in its continued development. Java has lost momentum as a programming environment under Sun's leadership (particularly relative to .NET) for the following three reasons:

   - First, Sun's stewardship of Java and its approach to the Java Community Process (JCP) has recently discouraged broad participation in the continued development of Java as an industry standard, as evidenced, for example by the submission of only 5 JCP 'specifications' in the past 12 months, a small fraction of those submitted just 3 years ago. Many key participants in the JCP, including Oracle, are frustrated by Sun's lack of momentum, which dissuades adoption of and contribution to Java standards.   Oracle and others have consistently argued that more inclusive governance of the JCP and broader participation will make Java more attractive.

   - Second, as a result of this stagnation in the JCP process, vendors already have and will likely continue to "fragment" Java as a programming language and environment for developers by either (A) publishing programming specifications in other forums, which do not have a clear process to ensure compliance with standards, or (B) developing closely compatible but slightly divergent proprietary versions of Java specifications. Examples of alternative Java forums include OSGi Alliance; OASIS; and Web Services Interoperability Forum. Google's "Android" is also an example of a splintering of the Java software developer community with an implementation that is a Sun Java Mobile Edition clone. This essentially ensures that for people building

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applications for mobile devices, there is no single multidevice programming model with significant adoption today outside of Microsoft Windows Mobile edition.

- Third, if the Java community continues to fragment and there are multiple specifications without a clearly defined and unified Java programming model for developers, the only viable alternative for developers is Microsoft Windows and .NET. This was precisely the goal of Microsoft when it attempted to fragment Java in the early 2000s with a competing implementation of Java. Indeed, the Commission itself spent years investigating precisely this set of facts. By fragmenting Java, Windows becomes a more dominant platform not only on servers, but also in a variety of other fast growing and strategic operational environments such as mobile devices, embedded devices, and rich internet applications. In other words, as Java fragments, Microsoft will benefit and the effects will compound quickly.

16. In Oracle's hands, Java's success will be based on proliferation, not simply exploitation. Oracle will earn revenue and profits through indirect monetisation (such as the sale of complementary products) through broader adoption of Java as a standard. The more customers adopt Java, the more system environments are hospitable to the over USD 10 billion/year of Oracle middleware and applications. The more developers adopt Java, the greater the choice and lower the cost for customers to use Oracle products, increasing demand. This indirect benefit from proliferation of Java is a more significant revenue stream than Sun generates from the direct monetisation. Oracle has a strong track record of preserving openness of acquired technology and this track record is consistent with Oracle's strategy in relation to Java. Overall, Oracle's stewardship of Java will ensure Java remains open-standard and will permit Oracle to bring resources to bear in order to challenge Microsoft's closed and proprietary .NET.

17. Oracle also intends to bring its experience and support capabilities to MySQL, better enabling it to reach a new audience of developers and customers and to challenge Microsoft's SQL Server.[10] Due to product and

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[10] Oracle is responsible for most of the major innovations in database technology over the past thirty years, has spent tens of billions developing database technologies and has the largest group of database developers in the world. By contrast, when Sun acquired MySQL it had very little existing database experience and therefore very little to offer the community. Open source works best when both the "sponsor" and the community are determining the products direction and are both contributing code and making investments in the product. The public record is clear that there was a substantial divergence between Sun and the core MySQL community after the Sun acquisition – in fact, the senior MySQL leadership team left Sun after a short period of employment. As a result of the Oracle/Sun transaction, Sun's MySQL developers will be united with Oracle's Inno DB development team, creating a critical mass of expertise and giving instant viability to the development community for MySQL. As the Commission is most likely aware, Inno DB is the most popular open source transaction engine, which is supported by Oracle and distributed with MySQL.

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technical characteristics, MySQL's strength is in two areas to which the Oracle database is not well suited: (i) customers with a specific need for horizontally scaling, web-centric databases, such as certain customer-facing web sites with functionality that prioritises speed over accuracy, and (ii) customers with limited IT budgets who can accept MySQL's limitations, such as individual departments and small and medium enterprises ("SMEs"), among whom Microsoft's SQL Server is often the default database. MySQL would also give Oracle a database that is popular in web-based applications due to its fundamentally different implementation and development profile, at least compared to Oracle's enterprise database, which is more transaction-focused. MySQL would also provide Oracle with access to new developer and customer relationships, which will facilitate the sale of complimentary Oracle technologies. MySQL is an attractive alternative to Microsoft SQL Server, but lacks world-class support. Oracle's support would overcome an important "vendor barrier to adoption" (for production, as opposed to development uses) which is one of Microsoft's key selling points against MySQL, namely: superior service and vendor staying power (along with, of course, technical integration with Microsoft's dominant Windows platform).[11]

18.   In addition, the acquisition of Sun would significantly help Oracle's sales and distribution capability in three important ways: (i) it would help broaden Oracle's indirect distribution channel by giving Oracle access to several key system integrators ("SIs"), independent software vendors ("ISVs") and value-added resellers ("VARs") who today implement Sun's products; (ii) it would help broaden Oracle's relationships in customer accounts by adding operating systems, servers and storage to Oracle's product portfolio; and (iii) it would add important technical resources and personnel to Oracle's direct sales efforts.

19.   Moreover, the combination of Oracle and Sun would provide customers and business partners (SIs, ISVs, hardware providers and VARs) the following important benefits:

   • *Investment Protection.* Sun customers, many of whom had concerns about the company's long-term viability and the certainty of specific product roadmaps (for example, for SPARC) would be reassured that Oracle's acquisition will protect their existing software and hardware investments and save them having to consider hasty and expensive

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[11]   Customers who have grown familiar with Oracle's quality of global database support will have greater confidence that more widely deploying MySQL will not put those customers at risk. In other words, if an implementation of MySQL breaks, the customer knows that Oracle will get it fixed—which allows MySQL to overcome any "vendor barrier" that a customer may have in entrusting its applications to MySQL or Sun.

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migration to an alternative solution. Existing customers will not need to migrate significant parts of their existing investments, due to the largely complementary nature of Oracle and Sun's products. Moreover, many large corporations who today use both Oracle and Sun products would not need two different support providers, but could consolidate to one vendor, thereby reducing overall costs.

- *Broader, More Innovative Products.* The combined software development organisation and the combined product line would be broader and more innovative than the existing solutions including, for example, pre-tuned and optimised hardware/software solutions.

- *Reinvestment in Critical Technologies and Innovations.* As stated, Sun's SPARC chip, Solaris OS and Java programming platform are critical technologies that require ongoing investment in order to compete against much the larger and better-financed Microsoft, IBM, Hewlett-Packard and Intel. Among other things, the acquisition will likely reduce the defection of Sun's top design engineers and architects to competitors such as Google or IBM, as employees see the increased resources Oracle can bring to these critical technologies and research projects.

20. *Oracle's strategic plans absent the proposed acquisition of Sun.* Oracle's goal is to reduce the IT costs of enterprise customers and public sector entities by providing standards based technologies to address a wide range of customer needs. Software is a scale business and Oracle is able to solve problems with its substantial research and development expenditures that would otherwise have to be custom coded by customers or bought separately and then integrated. Oracle has embraced industry standards so that customers can more easily "consume" new products.

In recent years, Oracle's strategy has extended beyond traditional enterprise applications (human resources, accounting), middleware, and database to what are called "industry-specific" applications. Examples of these applications are "customer care and billing", specific to the telecommunications business, or "risk management" specific to the insurance industry. Oracle's goal is to provide a complete solution that can be more readily integrated with a customer's "back office" or traditional ERP applications. Oracle expects to continue this effort in numerous additional industries, both through internal innovation and acquired R&D. Oracle's strategic plans in specific product markets are as follows:

- In database, Oracle continues to innovate around customers' mission critical needs which recently have focused on security and auditing (compliance). Oracle continues to deliver new technologies that enable

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customers to deploy an Oracle database in grids of industry standard hardware, thus lowering the total cost of these complex systems.

- In middleware, Oracle continues to be focused on delivering a standards-based suite of technologies to enable customers to more easily deploy, manage, and analyze their business applications.

- In applications, Oracle is in the process of developing its next generation of applications - Fusion Applications – which are written entirely in Java, are "service-enabled" and bring together the best of Oracle's applications portfolio of products. At the same time, Oracle continues to invest heavily in protecting its customers existing applications investments by continuing to develop all of its legacy applications technologies.

1.2   *Provide a summary (up to 500 words) of the information provided under Section 1.1. It is intended that this summary will be published on the Commission's web site at the date of notification. The summary must be drafted so that it contains no confidential information or business secrets.*

21.   Oracle Corporation ("Oracle") and Sun Microsystems, Inc. ("Sun") entered into an agreement pursuant to which a subsidiary of Oracle will merge with and into Sun and Oracle will acquire 100% of the outstanding voting securities of Sun for USD 9.50 per share in cash. Sun's Board of Directors has unanimously voted in favour of the proposed Transaction and Sun's stockholders approved the Transaction at a special meeting of stockholders held on 16 July 2009. Oracle stockholder approval is not required.

22.   Oracle develops, manufactures, markets and distributes enterprise software, including a broad range of middleware solutions, database software and enterprise applications software and related services. Sun provides standards-based computing infrastructure, including enterprise computing systems, software and storage. The Transaction will be an industry-transforming acquisition that will combine best-in-class enterprise software and mission-critical computing systems. It will enable Oracle to deliver an integrated system, from applications to disk, optimised for higher performance, improved reliability and enhanced security.

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SECTION 2

Information about the parties

2.1   *Information on notifying party (or parties)*

      Give details of:

2.1.1   *name and address of undertaking;*

Name:	Oracle Corporation
Address:	500 Oracle Parkway
	Redwood Shores
	CA 94065, USA

2.1.2   *nature of the undertaking's business;*

23.   Oracle develops, manufactures, markets and distributes enterprise software, including middleware, database software and enterprise applications software and related services.

2.1.3   *name, address, telephone number, fax number and e-mail address of, and position held by, the appropriate contact person;*

Name:	Ms. Dorian Daley
	Senior Vice President, General Counsel and Secretary
Address:	500 Oracle Parkway
	Redwood Shores
	CA 94065, USA
Telephone:	+1 650 506 4846
Fax:	+1 650 633 1813
E-mail	dorian.daley@oracle.com

2.1.4   *an address for service of the notifying party (or each of the notifying parties) to which documents and, in particular, Commission decisions may be delivered. The name, telephone number and e-mail address of a person at this address who is authorised to accept service must be provided.*

Name:	Clifford Chance LLP
Attention:	Mr. Thomas Vinje

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Address:	Louizalaan/Avenue Louise 65
	B-1050 Brussels, Belgium
Telephone:	+32 2 533 50 12
Fax:	+32 2 533 59 59
E-mail	thomas.vinje@cliffordchance.com

2.2   *Information on other parties to the concentration*

For each party to the concentration (except the notifying party or parties) give details of:

2.2.1   *name and address of undertaking;*

Name:	Sun Microsystems, Inc.
Address:	4150 Network Circle
	Santa Clara
	CA, 95054 USA

2.2.2   *nature of undertaking's business;*

24.   Sun is a corporation organised under the laws of Delaware, USA, and is headquartered in Santa Clara, CA, USA. Sun provides network computing infrastructure solutions. Its products are systems, including servers, desktops, microelectronics and storage, and software, including operating systems, Java Technology, middleware, virtualisation, database management systems and computer infrastructure. It also provides services, including support and managed services, and professional and educational services.

2.2.3   *name, address, telephone number, fax number and e-mail address of, and position held by the appropriate contact person;*

Name:	Mr. Mike Dillon
	General Counsel
Address:	4150 Network Circle
	Santa Clara
	CA, 95054 USA
Telephone:	+1 408 276 1300
Fax:	+1 408 748 0838

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E-mail   Michael.Dillon@sun.com

2.2.4   *an address for service of the party (or each of the parties) to which documents and, in particular, Commission decisions may be delivered. The name, e-mail address and telephone number of a person at this address who is authorised to accept service must be provided.*

Name:	Allen & Overy LLP
Attention:	Mr. Philip Mansfield/Ms. Alison Berridge
Address:	One Bishops Square
	London, E1 6AD, United Kingdom
Telephone:	+44 20 3088 4414/+44 20 3088 3449
Fax:	+44 20 3088 0088
E-mail	Philip.Mansfield@allenovery.com/Alison.Berridge@allenovery.com

2.3   *Appointment of representatives*

Where notifications are signed by representatives of undertakings, such representatives must produce written proof that they are authorised to act. The written proof must contain the name and position of the persons granting such authority.

Provide the following contact details of any representatives who have been authorised to act for any of the parties to the concentration, indicating whom they represent:

2.3.1   *name of representative;*

For Oracle:

Mr. Thomas Vinje,
Mr. Dieter Paemen and
Mr. Dimosthenis Dakanalis,
Clifford Chance LLP

For Sun:

Mr. Philip Mansfield and
Ms. Alison Berridge,
Allen & Overy LLP

2.3.2   *address of representative;*

For Oracle:

Louizalaan/Avenue Louise 65
B-1050 Brussels, Belgium

For Sun:

One Bishops Square, London, E1 6AD,
United Kingdom

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2.3.3   *name, address, telephone number, fax number and e-mail address of person to be contacted; and*

	For Oracle:	For Sun:
Name:	Mr. Thomas Vinje	Mr. Philip Mansfield
Address:	Louizalaan/Avenue Louise 65 B-1050 Brussels, Belgium	One Bishops Square, London, E1 6AD, United Kingdom
Telephone:	+32 2 533 59 29	+44 20 3088 4414
Fax:	+32 2 533 59 59	+44 20 3088 0088
E-mail	thomas.vinje@cliffordchance.com	Philip.Mansfield@allenovery.com

2.3.4   *an address of the representative (in Brussels if available) to which correspondence may be sent and documents delivered.*

Name:	Clifford Chance LLP	Allen & Overy LLP
Attention:	Mr. Thomas Vinje	Mr. Philip Mansfield
Address:	Louizalaan/Avenue Louise 65 B-1050 Brussels, Belgium	Avenue de Tervueren 268A, B-1150 Brussels, Belgium
Telephone:	+32 2 533 59 29	+32 2 780 2222
Fax:	+32 2 533 59 59	+32 2 780 2244
E-mail	thomas.vinje@cliffordchance.com	Philip.Mansfield@allenovery.com

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SECTION 3

Details of the concentration

3.1   *Describe the nature of the concentration being notified. In doing so, state:*

(a)   *whether the proposed concentration is a full legal merger, an acquisition of sole or joint control, a full-function joint venture within the meaning of Article 3(4) of the EC Merger Regulation or a contract or other means of conferring direct or indirect control within the meaning of Article 3(2) of the EC Merger Regulation;*

25.   This notification concerns a concentration within the meaning of Article 3(1)(b) of Council Regulation 139/2004 through which Oracle intends to acquire sole control of Sun. A copy of the Merger Agreement is attached as **Annex 3.**

(b)   *whether the whole or parts of parties are subject to the concentration;*

26.   The whole of Sun's business as outlined in Section 2.2.2 above will be subject to the concentration.

(c)   *a brief explanation of the economic and financial structure of the concentration;*

27.   *See* Section 1.1 above.

(d)   *whether any public offer for the securities of one party by another party has the support of the former's supervisory boards of management or other bodies legally representing that party;*

28.   Sun's Board of Directors has voted unanimously in favour of the Transaction. Sun's stockholders approved the Transaction at a special meeting of stockholder held on 16 July 2009. Oracle stockholder approval is not required.

(e)   *the proposed or expected date of any major events designed to bring about the completion of the concentration;*

29.   The Transaction is conditional upon (i) clearance under the antitrust laws noted at Section 1.1 above, and (ii) other customary closing conditions.

(f)   *the proposed structure of ownership and control after the completion of the concentration;*

30.   *See* Section 1.1 above. Upon consummation of the Merger, Merger Subsidiary will merge with and into Sun, with Sun surviving and continuing as a wholly-owned subsidiary of Oracle.

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(g)   *any financial or other support received from whatever source (including public authorities) by any of the parties and the nature and amount of this support; and*

31.   Oracle anticipates financing part or all of the Transaction through a combination of working capital, borrowings under existing lines of credit, its commercial paper program or debt offerings involving a consortium of financial institutions.

(h)   *the economic sectors involved in the concentration.*

32.   The Transaction concerns hardware systems (including servers and storage solutions), operating systems, databases, middleware and applications. For further details of the sectors involved and the affected markets within the meaning of the ECMR, please refer to Section 6.

3.2   *State the value of the Transaction (the purchase price or the value of all the assets involved, as the case may be).*

33.   Oracle's offer of USD 9.50 per share corresponds to approximately USD 7.4 billion in equity value and USD 5.6 billion net of cash and debt.

3.3   *For each of the undertakings concerned by the concentration provide the following data for the last financial year:*

3.3.1   *world-wide turnover;*

Oracle[12]	EUR 16,981,211,000
Sun[13]	[REDACTED]

3.3.2   *Community-wide turnover;*

Oracle	EUR 4,582,000,000
Sun	[REDACTED]

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[12]   Oracle's financial year runs from 1 June to 31 May. Accordingly, the most recent financial year ended on 31 May 2009. Turnover figures in Euro are adjusted according to the average daily European Central Bank exchange rate 1 June 2008–31 May 2009: EUR 1 = USD 1.369262, *see*: http://www.ecb.int/pub/mb/html/index.en.html.

[13]   Sun's financial year runs from 1 July to 30 June. Sun has not completed its financial statements for its 2009 financial year. Accordingly, the most recent financial year for which an annual report is available ended on 30 June 2008. Turnover figures in Euro are adjusted according to the average daily European Central Bank exchange rate 1 July 2007–30 June 2008: EUR 1 = USD 1.471408, *see*: http://www.ecb.int/pub/mb/html/index.en.html.

3.3.3   *EFTA-wide turnover;*

Oracle[14]   EUR 92,000,000

Sun   [REDACTED]

3.3.4   *turnover in each Member State;*

Member State	Oracle FY ended 31/5/2009 Turnover EUR million	Sun FY ended 30/6/2008 Turnover EUR million
Austria	62	[REDACTED]
Belgium	126	[REDACTED]
Bulgaria	13	[REDACTED]
Cyprus	5	[REDACTED]
Czech Republic	58	[REDACTED]
Denmark	88	[REDACTED]
Estonia	6	[REDACTED]
Finland	115	[REDACTED]
France	618	[REDACTED]
Germany	690	[REDACTED]
Greece	48	[REDACTED]
Hungary	46	[REDACTED]
Ireland	67	[REDACTED]
Italy	390	[REDACTED]
Latvia	5	[REDACTED]
Lithuania	5	[REDACTED]
Luxembourg	11	[REDACTED]
Malta	3	[REDACTED]
Netherlands	377	[REDACTED]
Poland	109	[REDACTED]

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[14]   Turnover figures in Euro are adjusted by converting monthly Oracle revenues in the applicable jurisdiction into Euro according to the average daily European Central Bank exchange rate at the end of each month from June 2007 through May 2008.

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Portugal	63	[REDACTED]
Romania	35	[REDACTED]
Slovak Republic	33	[REDACTED]
Slovenia	10	[REDACTED]
Spain	287	[REDACTED]
Sweden	157	[REDACTED]
United Kingdom	1,155	[REDACTED]
EU total:	4,582	[REDACTED]

3.3.5   *turnover in each EFTA State;*

EFTA State	Oracle FY ended 31/5/2009 Turnover EUR million[15]	Sun FY ended 30/6/2008 Turnover EUR million
Iceland	0	[REDACTED]
Liechtenstein	0	[REDACTED]
Norway	92	[REDACTED]
EFTA total:	92	[REDACTED]

3.3.6   *the Member State, if any, in which more than two-thirds of Community-wide turnover is achieved;*

34.   None.

3.3.7   *the EFTA State, if any, in which more than two-thirds of EFTA-wide turnover is achieved.*

35.   Norway.

3.4   *For the purposes of Article 1(3) of the EC Merger Regulation, if the operation does not meet the thresholds set out in Article 1(2), provide the following data for the last financial year:*

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[15]   Turnover figures in Euro are adjusted by converting monthly Oracle revenues in the applicable jurisdiction into Euro according to the average daily European Central Bank exchange rate at the end of each month from June 2007 through May 2008.

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3.4.1   *the Member States, if any, in which the combined aggregate turnover of all the undertakings concerned is more than EUR 100 million; and*

3.4.2   *the Member States, if any, in which the aggregate turnover of each of at least two of the undertakings concerned is more than EUR 25 million.*

    36.   Not applicable.

3.5   *For the purposes of determining whether the concentration qualifies as an EFTA cooperation case, provide the following information with respect to the last financial year:*

3.5.1   *does the combined turnover of the undertakings concerned in the territory of the EFTA States equal 25% or more of their total turnover in the EEA territory?*

    37.   No.

3.5.2   *does each of at least two undertakings concerned have a turnover exceeding EUR 250 million in the territory of the EFTA States?*

    38.   No.

3.6   *Describe the economic rationale of the concentration.*

    39.   *See* Section 1.1 above. For further details, please refer to Section 9.

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SECTION 4

Ownership and control

For each of the parties to the concentration provide a list of all undertakings belonging to the same group.

This list must include:

4.1.1   *all undertakings or persons controlling these parties, directly or indirectly;*

4.1.2   *all undertakings active on any affected market that are controlled, directly or indirectly:*

    (a)   by these parties;

    (b)   by any other undertaking identified in 4.1.1.

For each entry listed above, the nature and means of control should be specified.

The information sought in this section may be illustrated by the use of organisation charts or diagrams to show the structure of ownership and control of the undertakings.

40.   **Oracle.** Oracle is a publicly listed company whose common stock is traded on the NASDAQ National Market under the symbol "ORCL" and has been traded on the NASDAQ since 1986. No undertaking or person controls Oracle directly or indirectly. As of 31 March 2009, the two largest shareholders are Lawrence J. Ellison (approximately 23% of common stock) and Capital Research and Management Company (approximately 8.6% of common stock). A list of Oracle subsidiaries is attached as **Annex 6**. Oracle controls the companies listed in this **Annex 6** as a result of full or majority ownership.

41.   **Sun.** Sun is a publicly listed company whose common stock is traded on the NASDAQ National Market under the symbol "Java" and has been traded on the NASDAQ since 1986. No undertaking or person controls Sun directly or indirectly. The largest shareholder is Barclays Global Investors NA (approximately 5% of common stock). Currently, Barclays is the only investor holding more than 5%. A list of Sun subsidiaries is attached as **Annex 7**. Sun controls the companies listed in this **Annex 7**.

4.2   *With respect to the parties to the concentration and each undertaking or person identified in response to Section 4.1, provide:*

4.2.1   *a list of all other undertakings which are active in affected markets (affected markets are defined in Section 6) in which the undertakings, or persons, of the group hold*

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*individually or collectively 10% or more of the voting rights, issued share capital or
other securities;*

in each case, identify the holder and state the percentage held;

42.   Oracle does not hold 10% or more of the voting rights, issued share capital or other securities in any third-party database or middleware (including applications servers and identity management) vendor except in the following vendors: HyperRoll, Inc.[16] (approximately 14.15%); Sophoi, Inc.[17] (approximately 33.43%); Tomax Technologies, Inc.[18] (approximately 21.08%); and WTS, Inc.[19] (approximately 49.12%).

43.   Sun does not hold 10% or more of the voting rights, issued share capital or other securities in any third-party database or middleware (including applications servers and identity management) vendor, except for Infobright Inc., a private company that focuses on database software (Sun owns approximately 14.2% in the form of series B preferred stock).

4.2.2   *a list for each undertaking of the members of their boards of management who are also members of the boards of management or of the supervisory boards of any other undertaking which is active in affected markets; and (where applicable) for*

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[16]   HyperRoll is a software company based in Menlo Park, California with its primary development centre in Omer, Israel. HyperRoll is active in the Business Intelligence segment, which is not typically included in analysts' characterisations of what should be included in middleware. HyperRoll's products improve the speed with which data is loaded, queries are calculated and aggregates (meaning totals or summaries) can be computed from a database. Oracle's ownership interest in HyperRoll came through Oracle's acquisition of Hyperion Systems. Oracle currently does not have a business relationship with HyperRoll, although a distribution relationship is under consideration. Oracle and HyperRoll would collaborate in financial consolidation products that a company uses to collect data from its general ledger and other financial systems, consolidate that data for the purposes of financial summarisation and generate its required statutory financial reports (10K, 10Q, Annual Reports).

[17]   Sophoi, Inc., is a leading developer of enterprise business rights, licensing and royalty management solutions that enables corporations to efficiently manage and license intellectual property assets. Headquartered in Los Angeles, California, Sophoi has a worldwide network of sales and partner operations. In conjunction with Oracle's investment, Oracle and Sophoi partnered to bring innovative end-to-end solutions to the media and entertainment industry. For further details, *see*: "Oracle Invests in Intellectual Property Management Solutions Leader Sophoi," 16 March 2007: http://www.sophoi.com/index.php?option=com_content&task=view&id=50&Itemid=109.

[18]   Tomax Technologies, Inc., is one of the leading providers of innovative management solutions for the retail industry with offices in Salt Lake City, Utah, and Bangalore, India. Tomax is the only software solution provider exclusively serving the retail market with organic solutions spanning the entire Demand-Driven Retail Continuum. http://tomax.com/company/index.html.

[19]   WTS, Inc., provides a flexible hosting solution that reduces customers' IT infrastructure and staffing costs. It provides scalable, reliable and highly available solutions that evolve as our customers' enterprise needs grow, enabling strong and continuous long-term return on investment. Oracle is an equity investor in WTS. When WTS created the model that preceded its current hosted offerings, it solicited strategic input from Oracle, the software vendor whose products it would be offering to the marketplace. http://www.wts.com/wtsstory.asp.

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each undertaking a list of the members of their supervisory boards who are also members of the boards of management of any other undertaking which is active in affected markets;

in each case, identify the name of the other undertaking and the positions held;

44. No member of Oracle's Board of Directors is also a member of the board of any undertaking active in databases and middleware (including application servers and identity management), other than Hector Garcia-Molina, who serves as a member of the technical Advisory Board of Aster Data Systems (systems for data warehousing and analysis).

45. No member of Sun's Board of Directors is also a member of the board of any undertaking active in databases and middleware (including application servers and identity management) in relation to public companies; in relation to private companies, three Sun board members are also board members of companies that could be classified as active in databases and middleware. The Sun board members are as follows: James Barksdale – In-Q-Tel, Inc. (In-Q-Tel, Inc., partners to deliver identity management solutions); James Greene – Aricent (Aricent provides middleware products) and Nuvox (Nuvox offers web hosting, including database support for MySQL, amongst others); and Rahul Merchant – Collabera and Netuitive (Netuitive provides self-learning performance management software to improve software performance).

4.2.3   *details of acquisitions made during the last three years by the groups identified above (Section 4.1) of undertakings active in affected markets as defined in Section 6.*

Information provided here may be illustrated by the use of organisation charts or diagrams to give a better understanding.

46. Oracle has acquired control of the following companies since June 2006:

- July 2009: Relsys International (drug safety and pharmacovigilance solutions)

- June 2009: Conformia Software, Inc. (pharma design and development software);

- June 2009: Virtual Iron Software Inc. (virtualisation software);

- February 2009: mValent, Inc. (application configuration management solutions);

- November 2008: Tacit Software (automated profiling technology);

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- October 2008: Primavera Systems, Inc. (project portfolio management solutions for project-intensive industries);

- October 2008: RuleBurst Holdings Limited, parent company of Haley Limited (policy modeling and automation software for legislative and regulated industries);

- September 2008: ClearApp (application management solutions for composite applications);

- September 2008: Global Knowledge, Inc. (self-service training automation software);

- April 2008: BEA Systems, Inc. (enterprise application infrastructure solutions);

- March 2008: e-Test (acquired from Empirix) (application load and functional testing technology);

- January 2008: Captovation (enterprise content management with transactional content processing);

- December 2007: Moniforce (end-user experience management software);

- October 2007: Interlace Systems (strategic operational planning software);

- September 2007: Bridgestream (identity management with automated enterprise role management);

- July 2007: Bharosa (risk-based access management);

- April 2007: Tangosol, Inc. (extreme transaction processing);

- April 2007: Hyperion Solutions Corporation (business intelligence applications and tools);

- December 2006: Stellent, Inc. (content management solution);

- October 2006: Sunopsis (Oracle Fusion Middleware with high-performance, next-generation data integration capabilities).

47. Sun has acquired control of the following companies since June 2006:

- February 2009: Optical Tape Systems, Inc. (tape storage) (this was an asset purchase, wherein Sun acquired substantially all of the assets);

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- January 2009: Q-layer (cloud computing);

- April 2008: Montalvo Systems, Inc. (processors/microelectronics) (this was an asset purchase, wherein Sun acquired substantially all of the assets);

- February 2008: Innotek (open-source virtualisation software, VirtualBox);

- February 2008: MySQL AB (enterprise services and open-source database)[20];

- February 2008: Vaau, Inc. (enterprise role management and identity compliance solutions);

- October 2007: Cluster File Systems, Inc. (HPC portfolio);

- May 2007: SavaJe Technologies (integrated mobile software business) (this was an asset purchase, wherein Sun acquired substantially all of the assets);

- October 2006: Neogent, Inc. (identity management);

- July 2006: Kasten Chase Applied Research Limited (this was an asset purchase of substantially all of the assets from a bankruptcy proceeding).

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[20]   For a list of assets acquired by Sun as a result of this acquisition see **Annex 22.**

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SECTION 5

Supporting documentation

Notifying parties must provide the following:

5.1 *copies of the final or most recent versions of all documents bringing about the concentration, whether by agreement between the parties to the concentration, acquisition of a controlling interest or a public bid;*

48. Please refer to **Annex 3**.

5.2 *in a public bid, a copy of the offer document; if it is unavailable at the time of notification, it should be submitted as soon as possible and not later than when it is posted to shareholders;*

49. Please refer to **Annex 8**.

5.3 *copies of the most recent annual reports and accounts of all the parties to the concentration; and*

50. Please refer to **Annex 19** for Oracle and **Annex 20** for Sun.

5.4 *copies of all analyses, reports, studies, surveys, and any comparable documents prepared by or for any member(s) of the board of directors, or the supervisory board, or the other person(s) exercising similar functions (or to whom such functions have been delegated or entrusted), or the shareholders' meeting, for the purpose of assessing or analysing the concentration with respect to market shares, competitive conditions, competitors (actual and potential), the rationale of the concentration, potential for sales growth or expansion into other product or geographic markets, and/or general market conditions.*

For each of these documents, indicate (if not contained in the document itself) the date of preparation, the name and title of each individual who prepared each such document.

51. Please refer to **Annexes 31** and **32.** This annex includes a table of contents, an overview of the date of preparation, the name and title of each individual who prepared each document and copies of the documents.

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SECTION 6

Market definitions

The relevant product and geographic markets determine the scope within which the market power of the new entity resulting from the concentration must be assessed.

The notifying party or parties must provide the data requested having regard to the following definitions:

I.   ***Relevant product markets:***

A relevant product market comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use. A relevant product market may in some cases be composed of a number of individual products and/or services which present largely identical physical or technical characteristics and are interchangeable.

Factors relevant to the assessment of the relevant product market include the analysis of why the products or services in these markets are included and why others are excluded by using the above definition, and having regard to, for example, substitutability, conditions of competition, prices, cross-price elasticity of demand or other factors relevant for the definition of the product markets (for example, supply-side substitutability in appropriate cases).

II.   ***Relevant geographic markets:***

The relevant geographic market comprises the area in which the undertakings concerned are involved in the supply and demand of relevant products or services, in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighbouring geographic areas because, in particular, conditions of competition are appreciably different in those areas.

Factors relevant to the assessment of the relevant geographic market include inter alia the nature and characteristics of the products or services concerned, the existence of entry barriers, consumer preferences, appreciable differences in the undertakings' market shares between neighbouring geographic areas or substantial price differences.

III. ***Affected markets:***

For purposes of information required in this Form, affected markets consist of relevant product markets where, in the EEA territory, in the Community, in the territory of the EFTA States, in any Member State or in any EFTA State:

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(a)   two or more of the parties to the concentration are engaged in business activities in the same product market and where the concentration will lead to a combined market share of 15% or more. These are horizontal relationships;

(b)   one or more of the parties to the concentration are engaged in business activities in a product market, which is upstream or downstream of a product market in which any other party to the concentration is engaged, and any of their individual or combined market shares at either level is 25% or more, regardless of whether there is or is not any existing supplier/customer relationship between the parties to the concentration. These are vertical relationships.

On the basis of the above definitions and market share thresholds, provide the following information:

6.1   Identify each affected market within the meaning of Section III, at:

(a)   the EEA, Community or EFTA level;

(b)   the individual Member States or EFTA States level.

6.2   In addition, state and explain the parties' view regarding the scope of the relevant geographic market within the meaning of Section II that applies in relation to each affected market identified above.

A.   INTRODUCTION: COMPUTER SYSTEMS

52.   Modern computer systems are complex combinations of *hardware* and *software* that are integrated to automate, expedite and execute a variety of complicated, high-volume, mission-critical business functions within an enterprise.[21]

Hardware Overview

53.   Computer hardware encompasses the physical machines that process or "execute" the tasks that are assigned to them. For the average consumer, this commonly means desktop or laptop personal computers ("PCs") that are used for personal productivity (*e.g.*, word processing), communications (*e.g.*, e-mail), accessing the Internet and so on. The average enterprise, however, generally supports an Internet computing or client/server hardware model, wherein the enterprise uses machines called "servers" to run enterprise-wide

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[21]   For a simplified illustration of a modern computer system and the various components of the system, *see* **Annex 5**.

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processes, which are accessed by individual employees through "client" hardware such as a PC or a mobile device.

54.   Both servers and PCs run microprocessors, which are differentiated by their speed of executing instructions and other factors, such as the heat they generate, power consumption and form factor.

55.   Enterprise computing creates enormous volumes of data, which are stored in storage devices (themselves combinations of hardware and software), and are differentiated by capacity, speed of retrieval, form factor and other considerations.

Enterprise Software Overview

56.   Enterprise software (as distinguished from personal or consumer software) is a term used to describe a collection of programs, procedures and documentation that allows a computer to perform certain tasks to support the major business functions of an enterprise. Computer hardware (*i.e.*, the physical machines, processors, memory, *etc.*) can only execute the instructions it receives; enterprise software programs provide the instructions necessary to perform the desired tasks, take input from users and present output to the applications' main constituencies. Often, all the software components that are needed fully to perform tasks common to enterprises are referred to as an enterprise software "stack." Typically, references to the enterprise software stack include the following components:

- Operating System;

- Applications;

- Database; and

- Middleware (together with operating systems and databases sometimes referred to as "infrastructure software").

57.   Each of these components is described below:

- *Operating systems.* An operating system is a computer program that controls a computer's basic functions.[22] For example, operating systems are responsible for managing and sharing the resources of the computer

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[22] *See also* Case T-201/04, *Microsoft v. European Commission*, at paragraph 926: "'[s]ystem software' controls the hardware of the computer, to which it sends instructions on behalf of 'applications' fulfilling a specific user need, such as word processing," and "[o]perating systems are system software products that control the basic functions of a computer and enable the user to make use of such a computer and run application software on it."

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hardware (*e.g.*, input/output, memory, storage, files and directories) among all other software programs running on the computer system. Common contemporary operating systems include Microsoft's Windows and Mac OS for consumer computer systems and Windows, Linux and Unix (Sun Solaris, HP-UX, IBM AIX) for enterprise computer systems.

- *Applications.*   Applications are software programs written solely to accomplish a particular task for the user.   There are two broad general categories of application software: (i) personal or consumer applications (including personal productivity software such as Microsoft Office or Sun's StarOffice) and (ii) enterprise applications, which are software products that support the major business functions of an enterprise, often in a large distributed environment, such as corporate accounting systems, customer relationship management ("CRM"), human resources ("HR") or enterprise resource planning ("ERP").   Applications are typically written to perform tasks according to the rules of the particular operating system being used on a given computer system.   As a result, vendors often create multiple operating system-specific versions of the same application (*e.g.*, one version written for Windows, one version for Linux, *etc.*).   There are many enterprise application vendors, some of the largest of which are SAP, Microsoft, Oracle, Lawson, Sage and SSA Global, among many others.

- *Databases.*   Databases are software programs designed to organise, store, analyse and retrieve information.   A complete "database" consists of one or more data repositories (or "storage engines") in which the actual data is kept and a system (the "database management system" or "DBMS") for locating and working with the data.   Relational databases (or "RDMBS") such as Oracle's store data in tables (*i.e.*, "relations," expressed in columns and rows).   For example, an HR database would include information about all the employees in an enterprise, with a row of information for each employee – a column each for the employee's gender, job title, base salary and so on.   An employee of an enterprise with an HR database would use an HR software application to work with the HR information stored in the database.   Common examples of contemporary enterprise database offerings include Oracle Database 11g, IBM's DB2, Microsoft's SQL Server, Sybase, Enterprise DB, Ingres, MySQL and others.

- *Middleware.*   Middleware is a term that is used broadly to describe a variety of software programs that connect software components and computer systems. Middleware is particularly important in allowing multiple machines to work together across a network.   Middleware software programs make it possible, for example, for millions of people around the world simultaneously to be using an application (*e.g.*, a social

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networking web site or an enterprise accounting application) that is actually running on a number of computer servers located around the world, with the inputs and outputs being recorded in a database. Amazon.com, for example, can be viewed as a large enterprise application, even though most people think of it as a web site. Many millions of users may simultaneously search inventory, conduct transactions and access data stores over the Internet. Without middleware, only one person could use the application, on his own computer, with no ability to network with other users. In that sense, middleware software is the "plumbing" that allows computer systems to become more and more distributed, both geographically and from a resource perspective. Middleware software also allows developers to simplify and standardise how computer systems can more easily work together across a network. For example, once a certain middleware process or technology becomes "standardised" in the industry, then developers do not need to reinvent how to perform certain tasks (*e.g.*, how computers share information, or how web pages are configured) each time a developer writes a new program – they can just rely on the functionality provided by the middleware.

Middleware encompasses a broad category of software products and different vendors and analysts will define "middleware" differently – an exercise made more difficult since the functionality of one vendor's products sold separately as middleware may be embedded in and not offered separately from the operating system, database or applications of another vendor – and the product suites offered by vendors as "middleware" have vastly disparate breadths and capabilities. That said, middleware generally includes the following components:

o *Application server or "app server" software including TPMs and web server software:* Software that serves as a "traffic cop" for the computer system, allowing multiple applications (or multiple instances of the same application) on a computer system to perform a variety of tasks, such as communicating with a common database; managing interactions with a variety of different users (such as browsers); and prioritising the use of system resources such as memory or processor capacity for optimal systems performance. Transaction processing monitors ("TPMs") include software that allows an application to route users and their transactions across a number of different computers for optimal performance. TPMs mediate and optimise transaction processing between clients and a mainframe database. TPMs have evolved to such a point that they currently can act as application servers for legacy mainframe and client-server applications and can thus be considered substitutes for application servers for several customers. Web server software is

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responsible for accepting requests from clients' web browsers (PC, mobile device) and delivering the corresponding web page.

o *Application integration software:* Software which, broadly defined, allows applications to work together in a more efficient manner, including queuing systems, messaging brokers, message-oriented middleware ("MOM"), business process management, workflow and others. In particular it includes:

■ *Event management software ("EMS"):* Software that monitors and analyses a particular system or process and alerts end users or system administrators.

■ *Enterprise Service Bus ("ESB") and MOM:* An ESB is a piece of message-oriented middleware that is used to connect different enterprise applications and systems together using real-time messaging.[23] MOM generally includes software that allows applications to exchange messages with other applications and information systems to move data from one system to another.

■ *Business process management software ("BPMS"):* Also called Workflow, BPMS is a category of process automation software that models, executes and monitors processes or workflows which connect information systems, packaged applications, people and organisations with each other.

■ *Business activity monitoring software ("BAM"):* Software products that assists in the monitoring of business activities or business events occurring within an organisation and the analysis of the impact of these events on the key performance indicators that drive a business' performance. A broad variety of products are classified under the category of business activity monitoring software, including event management systems, complex event processors, business intelligence tools, event visualisation products and others.

o *Enterprise portal software:* Software, usually a single-point-of-entry, web-based user interface that allows information, people and processes to be integrated across organisational boundaries.

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[23] Note that most vendors would include ESB in the application integration segment, as it provides integration functionality.

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- o *Identity management software ("IMS"):* Software products that manage users' security credentials and access to information.

- o *Collaboration software:* Software that helps people collaborate in a work environment and generally includes messaging software, task management software and calendaring software, among other things.

- o *Virtualisation software (or Virtual Machine Software, per IDC):* Software that executes one or more simulated hardware environments on one physical computer. For example, using virtualisation software, a system administrator could partition one physical server into four virtual machines, two running Linux and two running Microsoft Windows. To a person using an application running in one of the Linux or Windows virtual machines, the application would seem to be running on a stand-alone computer. Virtualisation software reduces hardware costs by reducing the number of physical computers required to run a set of applications.

- o *Security software:* Through the use of security applications, organisations can provide security management, access control, authentication, virus protection, encryption, intrusion detection and prevention, vulnerability assessment and perimeter defence. All these tools are designed to improve the security of an organisation's networking infrastructure and help advance value-added services and capabilities.

58.   *Integration services.* Few if any organisations obtain enterprise software and hardware exclusively from a single source. The software and hardware components that comprise an organisation's system will often include newly acquired software and hardware, legacy systems (i.e., software and/or hardware acquired in the past), in-house developed solutions and solutions acquired by different functional or geographic parts of the same organisation from different vendors. These elements of the customer's system are often not developed or optimised to work together. In order to make these disparate systems (different layers of the stack or the software within the same layer of a stack, e.g., an HR and a finance application) work together in an optimal way, organisations call on systems integrators such as IBM, EDS, Accenture and CapGemini. System integrators generally engage in custom development requiring a significant number of man-hours, which can represent a significant cost to the customer.

Development Environments Overview

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59. *Development environments generally.* Development environments are software platforms that make it simpler and easier for developers to build and deploy applications. Development environments generally include a programming language, a set of standard libraries (source code for accomplishing certain tasks) and other programs for writing, testing and running applications. These components permit developers to standardise and simplify their efforts to build applications: the common language ensures that a developer's program will be understood by others, libraries allow developers to avoid reinventing common practices (*e.g.*, instructions on how to write data to a disk) and the platform programs certify that applications will follow uniform standards and specifications (and, therefore, work in a customer's environment).

60. The strength of a development environment depends heavily on (a) adoption of the platform by a critical mass of developers and customers and (b) the unity of the platform (*i.e.*, that developers and customers are adopting fundamentally the *same* standard platform). To the extent that an environment loses developers or customers, it becomes less attractive as a development environment – developers would prefer to write programs in a more popular environment (to target the wider group of customers) and customers do not want to invest in products that may end up being obsolete. In addition, if the development environment is not unified (or becomes "fractured"), it loses its value; developers would have to choose between "dialects" of the programming language, consider multiple libraries or certify their products on multiple standards.

61. *Development environments for enterprise software.* The primary development environments for enterprise software are Microsoft's .NET environment and Sun's Java environment. These two environments use diametrically opposed approaches to encourage adoption and unity of the development environment. Microsoft's .NET is a proprietary or closed environment that encourages adoption through close integration with its proprietary OS, database and applications. The world's most widely used development environment on the world's most widespread OS, Window's .NET, relies on its ubiquitous position to drive developers to elect to write programs for Windows in Microsoft .NET.

62. *The Java development environment for enterprise software.* Sun created the Java development environment over 20 years ago. Java is well known for its agnostic approach, captured in its "write once, run anywhere" motto. Java is specifically designed to allow a programmer to write an application in Java that will then be able to run on any OS (including Windows) and any hardware environment. In contrast with Microsoft's .NET development environment, Java's strength, therefore, comes from its openness.

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63. There are a variety of different components to the Java development environment: the Java language specification, Java virtual machines, Java class libraries, Java programming specifications (such as Java Enterprise Edition), and test compliance kits.

64. *Java is an "open" development environment.* First, Java is "open" in that it is not technically limited to any particular hardware platform or operating system, and therefore allows developers to write applications, which can be used on any operating system or hardware platform. Second, as discussed in more detail below, Java is developed under an open process, namely the Java Community Process, ("JCP") which is a process for the development and revision of Java technology specifications. The JCP is an "open" process as:

   • participation is available to all entities willing to sign the Java Specification Participation Agreement (the JSPA);

   • there are frequent opportunities for public comment even from non-JCP members; and

   • the specifications developed under the JCP process are publicly available on fair, reasonable and non-discriminatory terms.

65. The JCP process is extremely transparent, both within the Java Community and to whatever wider audience is interested, and moves forward through the building of consensus among expert technical communities.

66. Sun also distributes much – but not all -- of the Java technology it has developed (or organized the development of) under open source licences, such as the distribution of the work of the OpenJDK Community under the GPL v.2 licence. In that context, "open" refers to the use of licences recognized by the community as "open source." When the Java platform was first released over thirteen years ago, it was a radical departure for commercial software. By licensing full source code under a novel licence, the Java platform successfully created a large and open Java user-base with many compatible choices. However, Sun subsequently saw the open sourcing of Java as an opportunity to (a) encourage even more extensive adoption, particularly on platforms where Java hadn't operated before, platforms where Free licensing and open-source development approaches are a prerequisite and (b) accelerate innovation within the Java community.

67. Prior to November 2006, Sun had gained experience in community development with the Project GlassFish open-source implementation of Java EE, with OpenSolaris, with OpenOffice.org and NetBeans, and with the JDK Community on java.net. This experience gave Sun confidence that in making its Java implementations open source, the Java platform would benefit, and

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Sun would be able to better balance the needs of the Java community with those of customers, end users, and licensees.

68.   It is difficult to identify the sources of costs and benefits for Java users, whether as input providers or as output users. People both contribute to the development of, and use, Java technology in far too many ways and from far too many different roles, to make any generalization about costs and benefits. But the widespread adoption of Java technologies suggests that, for many, the benefits outweigh the costs.

69.   *The Java Community Process.* While Sun plays a significant role in the development of Java, it does not by any means play an exclusive one. Third parties can participate in development of the Java environment itself:

- By proposing and developing specifications (for new features, such as new types of graphics, *etc.*); and

- By implementing (adapting) the JAVA environment for different platforms.

70.   In the context of this collaborative process it is critical that all implementations support applications in the exactly same way, regardless of operating system or hardware configuration to ensure that the 'write once, run anywhere' principle is maintained and the Java environment remains attractive to developers. This requirement has led to the development over time of a structure to coordinate the various Java participants and to provide for a process by which the implementations of Java retained their integrity, namely the JCP.

71.   The JCP was established by Sun in December 1998, for the governance, development and revision of Java technology specifications. Through creation of the JCP as a quasi-standard setting organisation, Sun relinquished single licensor control in order to broaden participation in the development of the various Java platforms and to help to ensure Java's proliferation as a standardised platform for application development.

72.   More specifically, Sun cannot unilaterally enforce either a technical specification or a licensing structure on the Java community without, in either instance, going through the well-defined development processes of the JCP, as required by the contractual terms of the JSPA, and ultimately obtaining the approval of the applicable Executive Committee. Crucially, therefore, Sun has no legal or other power or right to unilaterally control the development of Java.

73.   The JCP's program goals include:

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- Enabling the broader Java community to participate in the proposal, selection, and development of Java APIs by establishing a means for both licensees and non-licensees to participate.

- Enabling members of the Java community to propose and carry out new API development efforts without the need for Sun engineers to be actively involved.

- Ensuring that the process is followed by all participants each time it is used through rigorous publicity and by enabling auditing at key milestones.

- Ensuring that each specification is backed by both a reference implementation and the associated suite of conformance tests (*i.e.*, the TCKs, see below).

- Helping to foster a good liaison between the Java community and other bodies such as consortia, standards bodies, academic research groups, and non-profit organizations.[24]

74.   To achieve these goals, the JCP sets out the standard procedure for the adoption of new Java specifications, which involves review and input from JCP members at numerous, defined stages, discussed in more detail below at paragraph 86.

75.   *Membership in the JCP.* Any individual or organization can become a member of and participate in the JCP by signing a bilateral Java Specification Participation Agreement ("JSPA"). Participation in the JCP—including Sun's participation—is governed by the terms of the JSPA. At present, there are more than 1,200 JSPAs in place including agreements with enterprise software vendors, government institutions, individuals, small software companies and even educational or non-profit institutions.

76.   By entering into a JSPA, a JCP member is authorized to participate in the JCP with respect to the development of new specifications or significant revision to existing specifications (called Java Specification Requests or "JSRs"), to review and comment on JSRs moving through the JCP, and may nominate themselves or others to serve on Expert Groups that create or revise JSRs.

77.   *Executive Committees.* Among the key participants in the JCP are the two Executive Committees relating to the three Java platforms (one Executive

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[24]   http://www.jcp.org/aboutJava/communityprocess/background.html.

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Committee for Java SE/EE, and another for Java ME).[25] The Executive Committees are responsible for approving the passage of specifications through key points of the JCP (described in detail below) and for supervising the reconciliation of discrepancies between specifications and their associated test suites. The primary function of the Executive Committees is to ensure that specifications do not overlap or conflict with one another and that the specifications meet the needs of the industry segment for which they are being written.

78. Each Executive Committee is composed of sixteen JCP members and represents a cross-section of major industry stakeholders and other Java Community participants. For example, the Java SE/EE Executive Committee includes, among others, the following JCP members:[26]

- o Apache
- o Eclipse
- o Ericsson
- o Fujitsu
- o Google
- o Hewlett-Packard
- o IBM
- o Intel
- o Nortel
- o Oracle
- o RedHat
- o SAP
- o SpringSource
- o Sun

79. Any JCP member may be selected to join one of the Executive Committees pursuant to one of two alternative selection procedures: ratification and election. Of the 16 voting members of each EC, 10 are ratified, 5 elected, and one is a representative of Sun Microsystems, Inc. The governance

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[25] There are three Java platforms that are governed by the JCP. Java SE (Standard Edition) is the general purpose Java platform used on desktop PCs, servers and similar devices. Java EE (Enterprise Edition) is based on the SE platform but includes various APIs and libraries that provide additional functionality that are used for enterprise applications. Java ME (Micro Edition) is designed for mobile devices and embedded systems (*e.g.*, mobile phones, set-top boxes and cameras). (Java Card refers to a technology that allows small Java-based applications (applets) to be run securely on small memory footprint devices (*e.g.*, smart cards, SIM cards); Java Card is not governed by the JCP).

[26] **Annex 29** includes contact details of the members of the Java Executive Committees.

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structure of the JCP was defined in version 2.1 of the JCP Process Document, which was drawn up by Sun after consultation with its leading Java partners. In recognition of Sun's role as the inventor of Java, the founder of the JCP, the general Specification Lead for the Java platforms, and the steward of Java technologies, the document guaranteed Sun one seat on each of the two Executive Committees, and also the right to appoint the chair of the JCP.

80.   Version 2.1 of the JCP Process Document specified that future revisions of the JCP Process Document (and of the JSPA) were to be carried out through the JSR process, with Sun nominating the Specification Lead for the revision of the documents and the Executive Committees acting as the Expert Group. There have been three subsequent revisions of the JCP Process Document, carried out through JSRs 171 and 215, without changing either Sun's right to a seat on each EC or to nominate the chair.

81.   The *ratification* ballot is carried out as follows:

- The PMO nominates members to fill vacancies "with due regard for balanced community and regional representation".

- Eligible JCP members vote on ratification of the nominee(s). A nominee is ratified by a simple majority of those who cast a vote.

- If one or more of the nominees are not ratified by the vote, the PMO will nominate additional members as needed and hold additional ratification ballots until the vacant seats are filled.

- All members are eligible to vote in a ratification ballot subject to the provision that if a member has majority-ownership of one or more other members, then that group of members will collectively have 1 vote.

82.   The *election* ballot is carried out as follows:

- Any JCP member may nominate itself for election.

- A general vote is held: all members are eligible to vote in an election ballot subject to the provision that if a member has majority-ownership of one or more other members, then that group of members will collectively have 1 vote.

- The nominees who receive the most votes fill the vacant elected seats. Ties are decided by drawing lots.

83.   The Executive Committees *vote on decisions* as follows:

- Votes are conducted electronically and the results made public.

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- In most cases, ballots are approved if (a) a majority of the votes cast are "yes" votes, and (b) a minimum of 5 "yes" votes are cast. Ballots are otherwise rejected. By way of exception:

  - EC ballots *to approve JSRs for new Platform Edition Specifications or JSRs that propose changes to the Java language* are approved if (a) at least a two-thirds majority of the votes cast are "yes" votes, (b) a minimum of 5 "yes" votes are cast, and (c) Sun casts one of the "yes" votes. Ballots are otherwise rejected.

  - EC ballots *to override a first-level decision on a TCK challenge* are approved if (a) at least a two-thirds majority of the votes cast are "yes" votes, and (b) a minimum of 5 "yes" votes are cast.

84.   When the JCP 2 Process Document was first debated and drafted within the community, both of these scenarios were viewed as sufficiently important to require the stronger consensus reflected by a super-majority to move forward:

- for the possible addition of a new Platform Edition Specifications, because of the scope of the effort involved and the possible impact on existing platforms; and

- with respect to the possibility of the EC overriding a first-level decision (by the Specification Lead) on a TCK challenge, to avoid the prospect of a mere popularity contest when faced with a possible allegation of bias in the construction or administration of the tests.

85.   It should be noted that to date there has been no invocation of this override mechanism.

86.   *The JSR Process: Development of Specifications and the Roles of the Specification Lead and Expert Group.* As noted above, the JSR process involves multiple steps of review, providing several opportunities for input by the various JCP members, Executive Committee members and the public. This creates a system of "checks and balances" on the development process. The following describes the key steps and participants involved in the process from proposal of a JSR to final release as part of the applicable Java platform:

- **Initiation**: A new specification or significant revision to an existing specification is initiated by JCP members. Any JCP member can submit a JSR to the JCP Program Management Office to propose the development of a new or revised specification. Once received, the Program Management Office places the JSR on its website for public comment. After the public review period, the JSR is then forwarded to

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the relevant Executive Committee, along with the public comments, for consideration and approval for development.

- **Early Draft Review**: Once the JSR is approved for development by the Executive Committee, the submitter of the approved JSR becomes the Specification Lead and a group of experts (the "Expert Group") are nominated by JSP members and selected to develop a first draft of the specification. The Expert Group makes the first draft of the specification available for Early Draft Review by JCP members and the Executive Committee. As a result of feedback received from the community and the Executive Committee, the Expert Group may refine the draft and prepare a Public Draft for further review. Importantly, at this stage the Specification Lead submits the licensing terms for the Reference Implementation and Technology Compatibility Kit ("TCK")[27] to the Executive Committee for its review and, ultimately, approval.

- **Public Draft**: The Public Draft goes out for review by the public where anyone (*i.e.*, not just JCP members) can comment on the draft. Following this stage of review, the Executive Committee decides if the draft specification should proceed to the next stage, in which the Expert Group uses the public feedback to prepare a Proposed Final Draft. The leader of the Expert Group then ensures the Reference Implementation and associated TCKs for the specification are completed before submitting the specification again to the Executive Committee for their final approval. Final approval by the Executive Committee occurs pursuant to a majority vote, with no one member (including Sun) having greater voting power than others. Once approved, the final specification and accompanying Reference Implementation and TCKs are published as part of the Java standard.

87. The procedures of the JCP promote full transparency and wide participation in all stages of specification development, and thus provide a very high level of assurance to the global Java community that a specification can be implemented and tested for conformance with the applicable Java standard. Broad participation and transparency are particularly significant because of the nature of JSRs as interoperability standards. The more stakeholders have a say in the development and the more application developers are apprised of how the specification is evolving, the greater the likelihood of adoption after eventual approval. Like many other standard setting organisations, the JCP ensures downstream interoperability specifically, that Java can be used by

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[27] Under the Java TCK Licence, the Specification Lead is required to make the source code of a 'reference implementation', or a sample implementation of the specification, available to licensees. Licensees of a specific TCK (such as the Java SE TCK) can then package or modify the source code of these reference implementations and include them in their own implementations of these specifications.

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anyone to write a broad array of applications (*e.g.*, databases, application servers, email clients, word processors, games, etc.) running on multiple platforms (*e.g.*, Windows, Linux, Unix). This is the essence of the Java "write once, run anywhere" mantra, which is Java's primary value as a development platform in the marketplace.

88. As described above, initiatives to define new or revised JSRs, must, by definition, be launched by one of the over 1200 members of the JCP. A list of all JSRs may be found at http://jcp.org/en/jsr/all. With the exception of JSRs numbered in the 900s, which were "grandfathered in" from before the JCP existed, JSR numbers are assigned chronologically. JSR 309 was the first JSR to be proposed in 2007. Its JSR Review Ballot (the initial vote by the Executive Committees on whether a JSR should be permitted to go forward) began on 23 January 2007. JSR 330 is the most recent JSR to be proposed (its Review Ballot began on 26 May, 2009).

89. Attached at **Annex 26** (extracted from http://jcp.org/en/jsr/all) is a list of all JSRs proposed during 2007, 2008, and 2009. Of these JSRs, only JSR 324 has been rejected. It was rejected at its initial Review Ballot. For the results of the ballot, including comments indicating why EC members rejected it, see http://jcp.org/en/jsr/results?id=4601.

90. *Arrangements relating to IP rights for new Java specifications.* As noted above, membership in the JCP is governed by the terms of the JSPA, which provides the framework for the licensing of IP rights relating to a particular JSR and specification. Under Section 4 of the JSPA, each JCP member agrees to grant the Specification Lead perpetual, fully-paid up, irrevocable licenses pertaining to the copyrights, trade secrets, patents and other intellectual property associated with such member's "contributions" to the specification. The JSPA, in turn, requires the Specification Lead to to (a) license the IP required to implement the Specification (i.e., no refusals to license), and (b) to do so under fair, reasonable and non-discriminatory terms (i.e., no discriminatory or unreasonable licenses). The Specification Lead thus becomes the "one-stop shop" licensor of the bundle of IP rights essential to implement the Specification.[28] In addition to its role as JSR IP licensor, the Specification Lead develops the Reference Implementation and the TCK license. Should the Specification Lead require Expert Group member IP for the Reference Implementation or the TCK, that IP is also licensed to the Specification Lead for further sublicensing under the same terms.

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[28]   Insofar as such IP rights are held by JCP members, although JCP members are free to negotiate fair, reasonable, and non-discriminatory terms with limited opt-outs for certain IP rights.

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91.   The IP rights licensed by the Specification Lead as a package under the JSPA include (i) the Specification Lead's patent claims that are essential for any compatible implementation, (ii) necessary patent claims of Expert Group members with respect to their own contributions when/if those contributions are incorporated into the specification or other output distributed by the Specification Lead, and (iii) necessary claims of any JCP member that are essential to a compatible implementation of any JCP approved specification. As the Specification Lead for the Java SE and Java EE specifications, Sun owns the copyright in each. Sun is also the Specification Lead for some, but by no means all, of the key technologies that make up the Java ME platform, since the relevant copyrights and the Specification Lead role are distributed across companies such as Nokia, Vodafone, Motorola, and others, as well as Sun.

92.   In practice, Sun has an extensive patent portfolio, including many patents which Sun believes would be likely to read on implementations of the Java SE, EE and ME platform specifications. That said, Sun has not done a comprehensive mapping of its patents against most types of Java implementations, so the weight of Sun's patent rights with respect to Java is somewhat speculative, particularly in the absence of a concrete instance of litigation surrounding the assertion of particular patents against a particular product that purports to implement a particular Java specification. Besides known third party copyright interests in some of the Java ME Specifications (see above), it is very possible that companies other than Sun hold patent rights potentially relevant to implementations of the Java SE, EE and ME platforms, but Sun has no specific knowledge about the scope or strength of such rights.[29]

93.   Generally, the JSPA provides the terms on which the Specification Lead must license the essential IP. In summary, the Specification Lead must grant a perpetual, fully paid up, irrevocable license to the relevant IP to anyone whose implementation satisfies the compatibility standards (Section 5.B of the JSPA). The compatibility standards are required to preserve interoperability and, thus, downstream vendor competition. Partial

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[29]   Sun also owns the copyright to the Java Virtual Machine Specification (actually, each of the Java platform specifications has its own virtual machine specification), owns the copyright to all or part of the various versions of the Java Virtual Machine(s) it distributes and, as with the platform technologies as described above, may have patents which are likely to read on implementations of the Java Virtual Machine Specification(s).

However, Sun has not done a comprehensive mapping of its patent portfolio against Java Virtual Machines available in the marketplace, so the weight of Sun's patents here too is speculative. It is possible that companies other than Sun hold patent rights potentially relevant to implementations of the Java Virtual Machine Specification, but Sun has no specific knowledge about the scope or strength of such rights.

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implementations of the specification, for example, are prohibited because otherwise a downstream application relying on the presence of certain APIs described in the JSR but absent in the partial implementation would not run correctly. Passing the TCK for the applicable specification ensures that the implementation is, in fact, complete and compatible. Additional safeguards are built into the JSPA to ensure neutrality of the Specification Lead. Section 5.C. prohibits the Specification Lead from imposing any contractual condition or covenant that would limit or restrict the right of any licensee to use the specification. Section 5.F. provides that the Specification Lead *must* offer to any interested party licenses concerning the Reference Implementation and TCK on fair, reasonable and non-discriminatory terms and prohibits the Specification Lead from requiring that a licensor's implementation adhere to *additional* requirements above and beyond those spelled out in the JSR. Significantly, the protection for current downstream licensees from the JSPA extends beyond the present contract term.

94.   In practice, these licensing limitations and requirements, together with the full disclosure requirements spelled out in JCP version 2.7, effectively prevent the Specification Lead from selectively disfavouring individual licensees in any way that would adversely impact their competitiveness in downstream markets.[30]   A licensee that satisfies the compatibility requirements set forth in Section 5.B (a) – (c) of the JSPA must be granted a TCK licence on fair, reasonable and non-discriminatory terms. As a practical matter, different licensees may be subject to different licence costs in the commercial context because they typically obtain their TCK licences pursuant to broader agreements with Sun (*e.g.* a TLDA or SSCL agreement).

95.   ***Decision whether to include the specification in a JAVA platform.*** As noted above, the decision to include a specification in a Java platform is a process that involves the entire Java community, is guided by the Specification Lead and Expert Group for the JSR and is subject to final approval by the Executive Committee.[31]

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[30]   This is discussed in more detail in paragraph 172 below, in the context of the discussion of the competitive effects of the Transaction in relation to Java.

[31]   Section 1.1.6 of the JCP 2 Process Document describes the mechanism for determining whether a specification is included as part of one of the Java platform specifications:

"*JSRs that want to be considered to be included in the definition of a Platform Edition or a Profile should describe this intent in the JSR's submission. The final decision whether a specific JSR is included in a Profile or a Platform Edition is made by the Spec Lead and Expert Group of that Platform Edition JSR or Profile JSR, and confirmed by the EC ballots on those JSRs. If the Platform Edition or Profile JSR turns down the request for inclusion, then the JSR for the API will be required to deliver a stand-alone RI and TCK.*"

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96. *Definition of the Java platform in which the specification is included.* The JCP 2 Process document defines "Platform Edition Specification (Platform Edition)" as "A Specification that defines a baseline API set that provides a foundation upon which applications, other APIs, and Profiles can be built. There are currently three Platform Edition Specifications: J2SE, J2EE, and J2ME."

97. *Java's reliance on third party developers.* Java relies heavily on third party developers to keep the Java ecosystem[32] healthy and viable. Developers (ISVs) write applications and applets in Java thereby creating demand for the Java platform. Among these developers are some of Sun's largest competitors. The Java development community also includes many corporate in-house developers writing Java applications and applets and individual unassociated developers. Sun has made the Java language freely available to assist all of these developers in writing Java programs, and also makes available a free development kit software (JDK), Java runtimes (JRE) to power their programs, and full-featured free, open source tools (NetBeans), as well as various educational and community building programs including SDN, Sun Tech days, and JavaOne. Keeping these independent and competitor-sponsored developers interested in, and investing in, Java and the availability of multiple Java platform vendors continues to be critical to Java's success and its future. If these third parties no longer write applications in Java, the Java platform will become irrelevant.

98. The Java platform community benefits from all these application developers, and includes many Sun licensees, partners and competitors, such as IBM for Java EE platforms[33], Apple and the Linux community for Java SE platforms, and numerous device manufacturers (Samsung, Nokia, Amazon, etc.) and runtime partners (Esmertec, Aplix) for Java ME platforms.

B.   THE PARTIES' OFFERINGS

99. *Server operating systems.* Sun offers the Solaris server operating system and an open-source variant, OpenSolaris. Sun also distributes its servers with third-party operating systems, including Windows, Red Hat, Ubuntu and SuSe Linux. Oracle offers a rebranded open-source redistribution of Red Hat

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[32]   The "JAVA ecosystem" comprises those who develop, implement, license and use Java technologies and their interdependencies.

[33]   IBM has been a Java licensee since 1996. IBM licenses most of Sun's Java technology at the source level, including Java EE, Java SE, Java ME and Java Card. IBM's total annual payment for the last fiscal year was USD 14 million. This includes access fees, royalties for Java EE and Java SE, and to a limited extent Java ME. IBM needs to pay additional royalties for shipping Java ME (under certain conditions) and Java Card.

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Linux called Enterprise Linux, but otherwise does not have an operating system offering.

100. **Database.** Oracle's flagship database product is Oracle Database 11g, which is available in a choice of editions tailored to meet the business and IT needs of all sizes of organisations. Oracle also offers its Oracle TimesTen, Berkeley DB and Oracle Database Lite offerings for specific application requirements.

- *Oracle Database 11g* comes in four editions: Standard Edition One (SE1), Standard Edition (SE); Enterprise Edition (EE); Personal Edition (PE); and Oracle Database Express Edition (XE). All four editions of Oracle Database 11g are built using the same relational database engine architecture and are completely compatible with each other. They are also available on a choice of operating systems and include a common set of application development tools and programming interfaces. Customers can easily upgrade from one edition to another as needs require, with no additional changes to the customer's database, middleware or applications.

- *Oracle TimesTen In-memory Database* is a memory-optimised relational database that empowers applications with the instant responsiveness and very high throughput required by today's real-time enterprises and industries. In-memory database (IMDB) technology is the foundation technology for Oracle TimesTen products. IMDB technology implements a relational database in which all data at runtime resides in the RAM of a computer or device, and the data structures and access algorithms exploit this property for breakthrough performance. Compared to a fully cached RDBMS, IMDB technology requires far less processing power, because the overhead to manage memory buffers and account for multiple data locations (disk and memory) is eliminated. With IMDB technology, magnetic disks are used for persistence and recovery rather than as the primary database storage location. Typically deployed as a cache or embedded database, Oracle TimesTen operates on databases that fit entirely in physical memory using standard SQL interfaces. Examples of uses of an in-memory database such as Times Ten includes telecom applications (such as online charging, session management, authentication and authorization, number portability, SMS management, etc); financial trading applications (*e.g.*, order matching); customer call centers to match callers to support personnel; airline reservation systems for reservations and fare calculations; and fraud detection applications (for fast execution of database queries).

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- *Oracle Berkeley DB* is a family of open-source, embeddable databases that provides developers with fast, reliable, local persistence with zero administration. Typically deployed as an embedded data repository within an application – which eliminates the need for the application to "call back" to a central server-based database – the Oracle Berkeley DB family provides very high performance, reliability, scalability and availability for uses that do not require complicated queries across complex data sets.

- *Oracle Database Lite* is designed for rapid development and for mobile environments. Oracle Database Lite provides a small footprint, SQL-enabled client database for local access to enterprise data by applications on a mobile device. In addition, it supports scalable data synchronisation and centralised management of mobile resources.

101.   Sun's database product is MySQL, which Sun promotes as the world's most popular open-source database. Designed for ease of deployment and maintenance, MySQL is most widely deployed for new generations of applications in which horizontal scaling is preferred.[34] MySQL runs on more than 20 platforms, including Linux, Windows, OS X, Solaris OS, HP-UX, AIX and Netware. Sun also offers a supported distribution of the open-source Apache Derby 100% Java technology database (which Sun calls Java DB, and PostgresSQL for Solaris).

102.   The following paragraph addresses recent MySQL updates. None of these updates have affected in any significant way the competitiveness of MySQL vis a vis Oracle database[35]:

- *Partitioning.* MySQL offers the 5 key forms of database partitioning (range, hash, key, list, composite) and partition pruning, resulting in faster database query response times. However, MySQL's implementation in this respect is still significantly behind Oracle's which offers parallel partition access, much more flexibility and choice in being able to specify partitioning keys, more partitioning styles, and more partitioning utilities and options.

- *Row-based replication.* MySQL now has a more industry-standard and safe form of replication using row-based replication. Again, however, Oracle's database replication is more advanced (*e.g.* multi-source).

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[34]   Horizontal scaling usually refers to deploying multiple independent computers together to provide additional processing power. Horizontal scaling typically implies multiple instances of operating systems, applications and databases residing on separate servers.

[35]   These upgrades are discussed in **Annex 23.**

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- *Task scheduler.* MySQL's task scheduler competes at the margins with Oracle's Job Scheduler/Queues although Oracle's product offers many more features and options.

103. *Middleware.* Both Oracle and Sun have middleware offerings. The Parties' offerings are available as stand-alone components or as part of broader middleware suites. The sections below present the Parties' offerings in each of the middleware segments:

- *Application server software and TPMs.* Oracle offers versions of Oracle WebLogic Server, versions of Oracle Application Server and Oracle Tuxedo.

  Oracle's WebLogic Application Server family consists of four different offerings:

  o *WebLogic Server Standard Edition* is Oracle's entry-level Java EE application server.

  o *WebLogic Server Enterprise Edition* includes all of Standard Edition plus clustering and management capabilities for larger-scale enterprise applications.

  o *WebLogic Suite* is Oracle's flagship Java EE application server offering, with full Java EE, clustering and management capabilities, as well as in-memory data grid and a real-time JVM for enterprise applications.

  o *WebLogic Application Grid* is an application grid offering that can complement application server environments or be deployed stand-alone in pure Java environments for extreme scale-out and extreme latency-sensitive applications.

  Oracle's Application Server Family consists of three different offerings:

  o *Application Server 10g Standard Edition* is designed to unify access to all the information assets of an enterprise into one common enterprise portal and to allow users to share content enterprise-wide.

  o *Application Server 10g Enterprise Edition* is an application platform suite ("APS") that offers a comprehensive solution for developing, integrating, and deploying all of an enterprise's applications, portals and web sites.

  o *Application Server 10g Standard Edition One* provides the same functionality as Oracle's Standard Edition product but is

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tailored to enable fast-growing businesses and ISVs to roll out solutions quickly through pre-built functionality that reduces development time and simplifies maintenance and operations.

Sun offers the GlassFish application server. It does not provide a TPM solution.

- *Web server software.* Oracle offers web server functionality as part of its application server offerings.

  Sun provides the Sun Java System Web Server, the Sun GlassFish Web Stack and the Sun Java System Web Proxy Server.

  Sun Java System Web Server and Sun Java System Web Proxy Server are relatively old products that Sun initially acquired as part of the Netscape/AOL alliance. Sun Java System Web Server is a Web Server product that is known for its support of a specific API for extensibility -- NSAPI. Sun is not actively selling this product to new customers; instead it is recommending the use of Sun GlassFish Web Stack. Sun Java Systems Proxy Server is a typical web proxy server, which solves network bandwidth issues and security issues.

  Both Sun Java System Web Server and Sun Java System Web Proxy Server are not being enhanced and are in a sustaining mode (critical bug fixes only). For new customers Sun recommends Sun GlassFish Web Stack.

  Sun GlassFish Web Stack is a complete open source cross-platform portfolio of Web-tier technologies that includes among its main elements Apache HTTP Server, GlassFish Enterprise Server (a full Java EE application server with support for dynamic languages that provides the foundation to develop and deploy next-generation applications and services), Apache Tomcat (an implementation of the Java Servlet and JavaServer Pages technologies); and Squid, a caching proxy for the Web supporting HTTP, HTTPS, FTP, and more.

- *Identity and access management software.* Oracle provides the following identity management products, available on a stand-alone basis or licensed as software suites:

  o *Oracle Access Manager* allows users to log in once and gain access to a broad range of IT resources. Oracle Access Manager provides an access control system that is shared by all a customer's applications. The result is a centralised and automated single sign-on ("SSO") solution for managing who has access to what information across the entire IT infrastructure.

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Oracle Access Manager is available as a stand-alone product or as part of the Oracle Identity & Access Management Suite.

o *Oracle Identity Manager* is a user provisioning and administration solution that automates the process of adding, updating and deleting user accounts from applications and directories. It improves regulatory compliance by providing granular reports that attest to who has access to what. Oracle Identity Manager is available as a stand-alone product or as part of the Oracle Identity & Access Management Suite.

o *Oracle Identity Federation* provides the infrastructure that enables identities and their relevant entitlements to be propagated across security domains – this applies to domains existing within an organisation as well as between organisations. Oracle Identity Federation is available as a stand-alone product or as part of Oracle's Identity & Access Management Suite.

o *Oracle Internet Directory* is a standards-based LDAP directory that serves as the central user repository for Oracle Identity Management, simplifying user administration in the Oracle environment and providing a standards-based application directory for the heterogeneous enterprise.

o *Oracle Virtual Directory* provides Internet and industry-standard LDAP and XML views of existing enterprise identity information, without synchronising or moving data from its native locations. This accelerates the deployment of applications and reduces costs by eliminating the need constantly to adapt those applications to a changing identity landscape as user populations are added, changed or removed.

o *Oracle Adaptive Access Manager* is part of the Oracle Identity Management Suite that provides protection for businesses and their customers through strong yet easy-to-deploy multifactor authentication and proactive, real-time fraud prevention.

o *Oracle Role Manager* helps customers define and manage organisational relationships, roles and associated privileges for improved security and regulatory compliance. Business users are empowered to manage business roles accurately and efficiently by using advanced statistical analysis, administrative automation tools and a highly flexible design interface.

o *Oracle Web Services Manager* allows IT management to centrally define policies that govern web services operations

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(such as access policy, logging policy, and load balancing) and then wrap these policies around web services without requiring modification to those services. In addition, Oracle Web Services Manager collects monitoring statistics to identify security threats, monitor uptime and ensure quality of service and displays them in a web dashboard.

o *Oracle Enterprise Single Sign-on* provides users with unified sign-on and authentication across all their enterprise resources, including desktops, client-server, custom and host-based mainframe applications.

o *Oracle Entitlements Server* secures access to application resources and software components (such as URLs, EJBs, and JSPs) as well as arbitrary business objects (such as customer accounts or patient records). Oracle Entitlements Server policies specify which users, groups and/or roles can access application resources, allowing those roles to be dynamically resolved at runtime.

o *The Oracle Authentication Services for Operating Systems* offers Linux and Unix environments a centralised, secure and seamless user authentication infrastructure.

Sun offers the following identity management products:

o *Directory Server Enterprise Edition*

o *Identity Compliance Manager*

o *Sun Identity Management*

o *Sun Identity Manager*

o *Open SSO Enterprise*

o *Role Manager*

• *Application integration and ESB.* Oracle offers the Oracle Integration and Enterprise Service Bus. It is also offered as part of its service-oriented architecture ("SOA") solution called SOA Suite, which also includes:

o Oracle BEPL Process Manager;

o Oracle Business Rules;

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- o   Oracle Business Activity Monitoring;

- o   Oracle Web Services Manager;

- o   The JDeveloper development environment.

Sun offers the following application integration products:

- o   *Sun Enterprise Service Bus* is a Java technology-compliant, web services-based, pluggable integration platform and the foundation of Sun Java Composite Application Platform Suite ("Java CAPS").

- o   *Sun Data Integrator* is optimised for high-performance extraction, transformation and loading ("ETL") of bulk data between files and databases.

These products are part of Java CAPS, Sun's service-oriented architecture offering that includes also:

- o   Sun Business Process Manager, which provides the ability to model, test, implement, monitor, manage, and optimise business processes that orchestrate the flow of activities across any number of web services, systems, people, and partners.

- o   Sun Intelligent Event Processor, which enables businesses to determine trends and proactively address critical business issues before problems escalate out of control.

- o   Sun Master Index, which uniquely identifies common records across disparate systems such as CRM, ERP and customer support systems, and uses data cleansing and matching technology automatically to build a cross-index that represent the same entity into a single view.

- o   Sun Adapters, which accelerate integration with legacy applications, packaged applications and data stores.

- *Event management.* Oracle offers the Event-driven Architecture Suite. Sun offers this functionality as part of its Java CAPS offering.

- *BPMS.* Oracle offers BPMS as Oracle's BEPL Process Manager and as part of its SOA Suite. Sun offers BPMS functionality as part of its Java CAPS offering.

- *BAM.* Oracle offers Oracle Business Activity Monitoring, while Sun does not offer BAM.

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- *Adapters and connectors.* Oracle offers Fusion Middleware adapters while Sun offers adapters as part of the Sun Adapters Bundle and the Sun Java CAPS offering.

- *Portal software.* Oracle offers:

  - *Oracle WebCenter Suite.* Suite to create, deploy and manage standards-based Enterprise Portals, AJAX and Social Computing Applications, including the following components: WebCenter Framework (development framework), Content Repository, Search, Portlet Container, Wikis, Blogs, RSS, Discussion Forums, Document Library, Presence and Chat.

  - *Oracle WebCenter Services.*[36] Oracle WebCenter Services provides a set of Web 2.0 services that are delivered as reusable, out-of-the-box components.

  - *Oracle WebCenter Interaction.* Oracle WebCenter Interaction is an integrated collection of components used to create enterprise portals, collaborative communities and composite and social applications. It provides a cross-platform, multi-language solution that supports both Java and .NET framework and includes prebuilt support for integrating with an array of enterprise systems including Oracle, IBM, Microsoft and SAP applications.

  - *Oracle WebLogic Portal.* Oracle WebLogic Portal provides a comprehensive service-oriented foundation for highly scalable custom portal solutions. Oracle WebLogic Portal is available stand-alone or as part of Oracle WebCenter Suite.

  - *Oracle Portal.* Oracle Portal enables companies to build, administer and deploy enterprise portals that are standards-driven, scalable, secure and dynamic.

  Sun provides the following portal products:

  - *Glassfish WebSpace Server*

  - *Portal Server Secure Remote Access*

- *Collaboration software.* Oracle offers Oracle Beehive.

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[36]   Oracle additionally offers the following middleware products: Oracle Application Grid, Oracle Business Intelligence, Oracle Business Process Management, Oracle Beehive Collaboration, Oracle Content Management, Oracle Data Integration, Oracle Development Tools, Oracle Coherence.

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Sun provides:

- o   Sun Java System Calendar Server

- o   Sun Java System Instant Messaging

- o   Sun Java System Mobile Communications

- o   Java Communications Suite.

- *Virtualisation software.* Oracle provides Oracle VM. Sun offers the open-source Sun xVM software.

104.   *Development environments.* Sun and Oracle offer implementations of Java specifications, and Sun also licenses out IP related to Java.

a.   *Java implementations.* Although Sun created the Java development environment 20 years ago and retains intellectual property rights in Java, the evolution of the development environment itself is managed through the multilateral JCP as described above.

As the specification lead for several of the core specifications in relation to Java, Sun provides reference implementations of several development environment components including the Java Hotspot desktop virtual machine, the Java NetBeans development tool, the OpenJDK Java SE implementation and (as noted above) the Glassfish application server.

Oracle provides implementations of components of the Java development environment, including development tools and a Java virtual machine. JDeveloper is a free development tool offering features for development in Java, XML, SQL and PL/SQL, HTML, JavaScript, BPEL and php. JDeveloper covers the full development lifecycle from design through coding, debugging, optimisation and profiling to deploying. JRockit and Oracle JVM are Oracle's Java virtual machines.[37]

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[37]   The factors that led Oracle to develop its own Java virtual machine were primarily technical:

o For Oracle's database server, Oracle uses its own Java Virtual Machine, which is tightly integrated within the database to execute stored procedures.. Integration of the Java Virtual Machine with the database memory manager, providing a different implementation of threading libraries, and the need for different compiler technology precluded Oracle from simply packaging the Sun JRE for this purpose;

o Second, for Oracle's Fusion Middleware, Oracle uses and distribute the Sun JRE as the runtime environment on Unix, Windows, and Linux platforms. However, Oracle also offers a more specialized Java Virtual Machine called JRockit for very high performance and real-time transaction

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b. *Licensing of Java.* As noted in paragraph 91 and 92, Sun being the originator of Java and the Specification Lead for the main Java platforms (SE, EE and ME), it owns intellectual property in Java which it licenses out to third parties:

o *Four principal license mechanisms.* Sun currently licenses its Java technology through four principal mechanisms:

  i. *Commercial.* Under its commercial licenses, Sun provides licensees with: (i) source code implementations of one or more Java specifications; (ii) the corresponding specifications themselves; (iii) the corresponding test suites (sometimes referred to as Technology Compatibility Kits or TCKs); and (iv) some level of technical support. For some Java technologies, licenses for trademarks to designate compatible implementations (i.e., the rights to brand a product as "Java Compatible") are also included as part of the overall set of commercial agreements.

  ii. *Open Source.* Certain Java technologies may be licensed under a General Public License (GPL) whereby any redistribution of the Java technology, modified or not, also occurs under a GPL license.

  iii. *Independent Implementations.* For parties wishing to implement Java specifications but who do not wish to have to license a corresponding implementation – variously referred to as "Independent" or "Clean-room" or "Clone" implementations – the specifications themselves are available for license, typically without charge. The TCKs, which correspond to these specifications, however, typically must then be licensed on a commercial basis.

  iv. *Binary versions of JRE and JDK.* Binary versions of both the Java Runtime Environment (JRE) and Java Development Kit (JDK) are available from Sun without

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processing requirements. The JRockit Java Virtual Machine is also specialized to run efficiently on multi-core processor architectures;

o Third, Oracle also offers its own Java Application Server as part of Oracle Fusion Middleware. It provides significantly higher performance, scalability, and high availability/clustering features than does the Sun Glassfish Application Server.

From an IP Rights/licensing perspective: Oracle needs to license the TCK licenses for J2SE for the Java Virtual Machine that it has implemented in its database server and for JRockit. Oracle also needs to license the TCK License for J2EE for its Java Application Server.

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charge. "Binary" means that these programs are provided in their "executable" or ready-to-run form, without need for any compilation or modification by the user. The JRE is an implementation of the Java Virtual Machine (JVM), which actually executes Java programs.[38] The JRE is available as a plug-in, and is needed for running programs written in the Java language. Users of the Internet frequently will access applications or applets (small applications launched from inside a browser) that prompt the user first to install the most recent version of the JRE (by clicking on a link provided by the applet). Besides the JVM, the JRE includes certain core libraries and other components to run applications and applets written in Java. The JDK is a bundle of software that can be used to developed Java-based applications. The JDK includes not only the JRE but also a set of API classes, a Java compiler, Webstart and additional files needed to write Java applets and applications.[39]

Note that a license from Sun is not a prerequisite for all development scenarios. The chart below summarizes scenarios in which one might consider whether a license is required, specifically, a license to the suite of tests called the Test Compliance Kit ("TCK") that is used to certify compliance with a particular Java Specification.[40] Each scenario is discussed in greater detail the text that follows.

#	Scenario	Is a TCK License required?
1	Vendor wants to write and distribute a Java application	No
2	Vendor wants to write and distribute a non-Java application (ABAP, .NET, C++, Python, etc.)	No
3	Vendor wants to write and distribute a Java or	No

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[38] For example, the Java Virtual Machine Specification is available from the JCP website and has also been published in book form. It is theoretically possible to use the published Specification to implement it and the supporting class libraries. Sun is not able to estimate with any confidence what it would cost a company to do this. It is not correct to say that "no IP rights would be needed to be licensed from Sun or others". Each of the Java platforms includes a virtual machine specification. As noted previously, Sun has copyright and may have patent rights relevant to implementations of these platforms. However Sun has obligations to provide licenses to these IP rights under the JCP, as described above.

[39] The text of JDK and JRE binary code licenses are included at Annex 27.

[40] Annex 38 contains a customer presentation describing the certification process and templates for Java EE and Java ME self-certifications. Any implementation of a Java technology defined through the JCP requires certification in this way.

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	non-Java application that interoperates with a Java application or Java platform middleware		
4	Vendor wants to write an application that uses the Reference Implementation binaries or executable code but not the source code	No
5	Vendor wants to modify the Reference Implementation source code and distribute modified binaries and/or source with the redistributed product branded as Java SE, Java EE, Java ME compliant	Yes
6	Vendor wants to write and distribute an Independent Implementation (*e.g.*, a Java SE or EE implementation from scratch)	Yes
7	Vendor wants to modify the Reference Implementation source code for internal use only	No

Starting with the scenarios in rows #1-4, *no Java TCK license is required by a vendor developing applications* (either in Java or in other computing languages), regardless of the Java platform (*e.g.*, EE, SE or ME) that the developer is targeting. These vendors may freely distribute their application programs, including the binary executable of the appropriate Reference Implementation, or they may rely on the availability of that functionality on the desktop or server (including someone else's application server).[41] Since these vendors neither use nor modify the source code of the Reference Implementation, they do not need a TCK license in order to ensure compatibility with the specification. Accordingly, application software vendors are typically not TCK licensees (unless they also happen to make Java application servers or development tools, which would require a TCK license).

Only vendors that modify the source code of the reference implementation or create independent implementations and want to distribute their products as Java-compliant need TCK licenses (see rows #5-6).[42]

Such licenses are offered essentially in two ways: 'bundled' and 'stand-alone'. Most commonly, the TCK licenses are granted in

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[41]   Including the reference implementation binaries requires a no-cost license from Sun. Most application ISVs therefore ask the user to download and install the reference implementation from Sun's website, which also eliminates the need for the ISV to maintain multiple packages of the application (for Windows, Linux, OSX, Solaris, etc.).

[42]   Notably, use of the (open source) reference implementation without redistribution does not require a TCK license, so the group of companies requiring a TCK is only a sub-set of the firms modifying the reference implementation source code or creating independent implementations. (See row #7).

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